A Complete
Trouble-Shooting Guide

050N PT. 197
PRICE 6.95
M 5G M 5641

First Aid for Your Apple® II/IIe

What to do when things go wrong

Dorthea Atwater

Ballantine/31942/$6.95 in USA • $8.95 in Canada

FIRST AID
for your
APPLE IIe

FIRST AID for your APPLE IIe

DORTHEA ATWATER

BALLANTINE BOOKS • NEW YORK

Every effort has been made to insure the accuracy of the material presented in this book. The publishers and the author accept no responsibility for errors, omissions, or damages resulting from the use of this information. Apple IIe is a registered trademark of Apple Computer Corporation. This book is neither authorized nor endorsed by Apple Computer Corporation.

Copyright © 1985 by Dorthea Atwater

All rights reserved under International and Pan-American Copyright Conventions. Published in the United States by Ballantine Books, a division of Random House, Inc., New York, and simultaneously in Canada by Random House of Canada Limited, Toronto.

Library of Congress Catalog Card Number: 84-91761

ISBN: 0–345–31942–7

Cover illustration by Debra Solomon
Cover design by James R. Harris
Text design by Levavi & Levavi

Manufactured in the United States of America

First Edition: May 1985

10 9 8 7 6 5 4 3 2 1

CONTENTS

PREFACE xvii

INTRODUCTION xxiii

1. COMMON SETTING-UP PROBLEMS 1

2. HARDWARE FIRST AID: THE MAIN UNIT, KEYBOARD, AND SCREEN 10

3. DISKS AND DISK DRIVES 28

4. PRINTERS AND CABLES 40

5. MODEMS AND COMMUNICATION 57

6. SOFTWARE SAFETY 65

7. DISK OPERATING SYSTEMS AND BASIC PROGRAMMING 76

8. WORD PROCESSING SOFTWARE 88

9. ELECTRONIC SPREADSHEETS 100

10. DATA BASE MANAGEMENT SYSTEMS 110

11. ACCOUNTING AND BOOKKEEPING SOFTWARE 119

12. PRESCRIPTIONS FOR LONG-TERM HEALTH 126

FURTHER READING 135

INDEX 137

LIST OF SYMPTOMS

MAIN UNIT AND SCREEN

There's nothing on the screen. 19
All you see on the screen is odd or meaningless symbols. 20
An error message is displayed on the screen. 22
When starting up the computer, you get a message saying "APPLE II" and nothing more. 23
The computer runs out of control: the standard keyboard commands in the program you're using won't get its attention. 23
You cannot see all of the display—some of the image is off to the side, or it jumps or flickers up and down. 24
Intermittent error messages appear on your screen, indicating errors in RAM. 24

KEYBOARD

Keyboard gives no response or incorrect letters or symbols appear on the screen. 25

A character is repeating across the screen. 25
The computer does not respond to anything typed into the keyboard. 25
The computer has been working fine. Suddenly your keyboard gives you no response. The screen may fill up with garbage or remain empty. 26

DISKS AND DISK DRIVES

You can't find the file you need on the disk. 37
The disk drive is making unusual grinding or chattering noises. 38
Initialization fails. You get error messages while you are trying to format a disk. 38

PRINTER AND CABLES

The self-test does not work. 44
The print head moves and tries to print but fails. 45
The printer does not print but the self-test works. 45
The alarm signal on the printer goes off. 47
When you are trying to print, your screen promptly "freezes" and you are unable to move your cursor or use the keyboard to enter any command. 48
Printer prints too close to the bottom of the page. 48
The printer prints double or overprints on the last few lines of the page. 49
Unwanted letters are printed. 49
The daisy wheel prints out degree signs where there should be apostrophes. 50
The words look crowded on the page. 50
The printer doesn't stop printing at the bottom of the page. Words print off the bottom of the page or over the page perforation. 50
Tops or bottoms of letters are being cut off across the page. 51
The printer prints unevenly—some letters are light, some are dark, some letters don't show up at all. 52
Letters are disappearing, and the printing is faint. 52

Only half of a letter (top or bottom) is printing. 52
Printer prints only 3's (for instance). 52
Printer prints @ ("at") signs. 53
Paper creeps to the right after a few pages of printing. 53
An uneven spread of letters is occurring across the page. 53
Printing gets lighter or more uneven on only one side of the page. 54
The printer jumps down to the next line (in a spreadsheet or word processing program, for instance) so that some of the first line is continued on the second. 54
Margin fluctuates, with some blocks of text printing correctly and other blocks out of place. 54

MODEMS AND COMMUNICATION

You can't get your computer to communicate through the modem. 61
You can communicate with another computer or BBS (Bulletin Board Service) but are unsuccessful in transfering files. 62
You are getting double keystrokes on the screen when you type in a command. 62
Your printer is missing words when you try to print out what's coming in over the modem. 63
You have purchased an auto-dial modem but it will not dial a number. 63

SOFTWARE SAFETY

You can't get a program to work properly. 70
Your work suddenly disappears from the screen. 70
You can't find a file that is supposed to be on a disk. 71
The program fails when writing to disk. 71
The program fails while trying to load another program from the disk. 72
After running fine for a while, the program fails. 72
Your program tells you that you are "Out of Room" and refuses to proceed. 73

You have installed your program with the correct name of your printer but you cannot get it to print. 73
Your computer program won't stop running. 74
You consistently get error messages while copying files from one disk to another, when loading software into the computer's memory, or when saving data on a disk. 74

OPERATING SYSTEMS AND BASIC PROGRAMMING

Operating system can't find file on disk. 84
Your program won't run when you try to run it. 84
You get the "VOLUME MISMATCH" error message. 84
While trying to copy a file to or save a file on a disk, the "DISK FULL" message appears, even though the sector counts on your directory file listings indicate that you should have room available. 85
A data file you've been using suddenly can't be found. 85
The computer starts running a program during the booting process. 85
While using the INIT program, your computer screen goes blank and you cannot continue the program. 86
A disk which has been reliable suddenly starts acting strangely. You get error messages or can't print files. 86

WORD PROCESSING

Your *Bank Street Writer* program won't allow you to write. 95
Part of the line your cursor is on goes off the side of the screen as you are writing with the *Magic Window* (or similar) word processing program. 95
Text is missing from your printed-out *Word Handler* file. 96
Strange symbols appear in the printout. 96
In *Applewriter II* your command for "global search and replace" doesn't work. 96
Your *Applewriter II* commands don't work. 97
While working with the *Magic Window* word processing

program, you try to load a text file, but the program can't find it. 97
You are trying to print a mail-merge letter, but the names show up in the wrong place—the street address is positioned where the last name should be. 97
One of your mailing list categories will not print out. Instead, your category name is appearing. 98
When printing a document, the left-hand margin of the printout is uneven; several lines start at one margin, other lines start at a different margin. 98
Part of your work disappears off the right or left side of the screen. 98

ELECTRONIC SPREADSHEETS

While you're entering data and formulas into a *CalcStar* or *VisiCalc* spreadsheet, a message appears: "MEMORY/BUFFER FULL" or "NOT ENOUGH MEMORY." 104
The "MEMORY/BUFFER FULL" or "NOT ENOUGH MEMORY" messages appear when you try to reload the spreadsheet. 104
Your spreadsheet appears to give the wrong answers to a formula you have entered. 105
As you are building a spreadsheet in *Multiplan*, you notice it is becoming harder and harder to enter new material; the keyboard seems to be "locking up" temporarily. 105
A formula entered in a spreadsheet cannot be found. 106
Your printer doesn't print all of your spreadsheet. The numbers at the extreme borders are missing. 106
When you reload your spreadsheet file, you find there's nothing there. None of your numbers can be found in the file. 107
When you try to type something into a cell, you are unable to, and the program gives you an error message. 107
Your spreadsheet commands aren't working, yet you know the grid isn't full. 108

When you are trying to find your previously saved spreadsheet, the computer says "FILE NOT FOUND." 108
Your spreadsheet is taking up more memory than you think is necessary. 108
When you try to enter a calendar date, a complicated decimal appears in the cell. 108

DATA BASE MANAGEMENT SYSTEMS

You get a "DISK FULL" message while sorting. 113
Your printout does not include the field or category you wanted. 113
You get an "EXTRA IGNORED" message from Applesoft while loading a data file. 113
In *PFS:File*, the message "FILE NAME CAN ONLY HAVE 8 CHARACTERS" appears. 113
The computer never stops sorting. 114
You cannot get *PFS:File* to sort into alphabetical order on the screen. 115
You cannot get your *PFS:File* and *PFS:Report* to give you a sorted printout. 115
After designing a new *PFS:File* form you begin entering data, but only the first name you save comes up. 115
In *DB Master*, you have designed a long, 2-screen form, and are unable to exit and store the new form on your disk. 116
When you try to back up a data diskette with the *DB Master* "File Maintenance" program, you can't do it. 116
Your *DB Master* program won't accept your password. 116
In *DB Master*, you have entered many new records, but when you go to review them, they aren't there. 117

ACCOUNTING AND BOOKKEEPING

"BASIC error message ##" is displayed. 121
Your printer prints out accounting statements on two lines instead of one. 121
Your payroll program calculates the wrong tax percentage. 122

"DISK FULL" message appears on the screen. 122
The system crashes. No further keyboard input is accepted. 123
The computer won't stop processing; no new messages appear on the screen; the computer seems frozen. 123
The program will not accept your entries. 124
Items already deleted from the screen entry still print out. 124
Your attempt to reconcile your bankbook with *Home Accountant* results in incorrect computations. 124
In *Dollars and Sense*, you can't exit the "Define Accounts" section of the program. 125

For my family

ACKNOWLEDGMENTS

Thanks to my husband, Peter Hay, whose clear insights put things in perspective; to friend and agent Richard Kahlenberg; and to Eve Tettemer Siegel. Thanks also to my colleagues for their expert observations: Dan Hickey, Essor Maso, Earl Dennis, Torsten Hoff, John P. Lawson; and to Conner Everts (The Younger), Jay Kohorn, Jimmy Huston, and my other colleagues, customers, and friends who gave support and advice. Last but not least, thanks to Edward Walters of Ballantine Books for his editorial expertise.

PREFACE

EPISODE I: A TRUE STORY

David, a writer friend of mine,* was the happy owner of a new Apple IIe. One evening, as he was using the IIe to write an important story, the lights around him dimmed slightly, the screen faded, and all his work disappeared. He stared at the screen incredulously. Nothing was left except a blinking cursor. All his work was gone.

SYMPTOM: Nothing on the screen

(See Chapter 2, Hardware First Aid: The Screen)

David tried in vain to use the arrow keys to move the cursor up and down, hoping that his work had simply scrolled out of sight. Nothing happened. The cursor didn't respond. Nothing responded.

---

* All personal names have been changed to protect the innocent!

SYMPTOM: Keyboard seized up

(See Chapter 2, Hardware First Aid: The Keyboard)

Finally he realized he had no choice but to give up trying to find a solution. He had to restart the computer, or "reboot." He turned the computer off, then turned it back on again and looked for the file that contained his story on the directory of the disk. It wasn't there.

SYMPTOM: File not found on directory

(See Chapter 6, Software Safety)

David's incredulity quickly grew into panic. Not only had the dimming lights taken away his new, unstored work from the RAM or internal memory, but it also had eradicated the work he had stored on his disk. Several weeks of writing and rewriting—and more of creative time—were down the drain. He trudged upstairs to the kitchen in a state of shock. His son was putting a piece of frozen pizza in the microwave oven. As the microwave power went on, the lights in the room dimmed slightly. And a light went on in the writer's head: the microwave had caused the lights to dim—and probably sent some other kind of electrical wave through the house circuits, and into his computer.

Preventive medicine

(See Chapter 1, Common Setting-up Problems)

No one had told David about the importance of making copies, or "backing up" his original work; all of it had been on the disk he was working with.

Now it was gone. (In fact, as he told me later, at that time he didn't understand the importance of preparing extra disks.)

More preventive medicine

(See Chapter 6, Software Safety)

Fortunately, this story has a happy ending. A friend who knew a little bit more about computers told David that there was a program for his Apple that would allow him to reclaim erased and damaged files, even if they appeared to be gone for good.

Reclaiming erased files

(See Chapter 7, Disk Operating Systems and BASIC Programming)

And so David learned far more than he had wanted to about computers, as he painstakingly reconstructed the computer files that contained his story from different sectors on the disk. "It was like psychoanalysis!" he told me. "I was reconstructing a whole history from fragments on the disk."

David learned his lesson the hard way, and is now a model computer owner. He purchased a line filter and surge protector for the electrical outlet in his study to screen out unwanted electrical interference from both his microwave oven and other sources, such as the neighbors' power saw. He keeps plenty of prepared disks on hand in case he runs short when copying his work onto a backup disk. He backs up his work often. And his family is careful about when they use the microwave oven.

EPISODE II: IT COULD HAPPEN TO YOU, TOO!

You have had your Apple IIe less than a month. You are sitting happily at the machine, trying out a new program. As you move the cursor, following the instructions in the manual, the screen suddenly dissolves into bits of symbols flying wildly in all directions. Welcome to computer garbage.

You grab for the telephone and dial the store where you bought your IIe. You ask for the person who so helpfully explained how terrific the computer would be, the one who promised that it would change your life. He's out to lunch. There's no one else available who can help. You leave an urgent message. You wait and wait—past one o'clock, two o'clock, three. The salesperson doesn't call you back. He was right: the computer is changing your life. You are having a nervous breakdown!!

EPISODE III: STRANGE SOUNDS

You have just finished writing a report. You want to print it out on your new letter-quality daisy wheel printer, in which you have invested a lot of money. As you turn on your printer for the first time, it suddenly emits an awful grating sound. Smudges appear on the paper where there should be words. In horror, you shut off the power and pick up one of the 300-page manuals that came with the system. There is nothing in the manual that describes awful grating sounds.

EPISODE IV: NOW YOU SEE IT, NOW . . .

You have been using your Apple's electronic spreadsheet to do your entire ledger for your last year's taxes. You are thinking how pleased your accountant will be with this neat summary of figures. You decide to erase several other files on your spreadsheet disk. To your horror, you realize that you have accidentally erased the final version of your spreadsheet. It will take you days to reconstruct the information.

These are four extremely disagreeable, but typical, experiences, among the hundreds that computer owners can experience. You won't hear about them in the sales pitches for computers. They are not covered in the owner's manuals.

Yes, Virginia, computers do break down (or give their owners nervous breakdowns). Computers are supposed to be fast and efficient, and they are—when they're doing their appointed tasks. Owning one does change your life. Once you know more than just how to follow a manual, when you have mastered the many tricks of this most revolutionary and disconcerting of all human-made machines, you'll find that personal computing can provide great satisfaction. Unfortunately, the silliest and the tiniest oversights may cause agonizing hours of delay. "Down time" may apply equally to the machine and to your state of mind.

The good news is that the vast majority of the problems you will encounter, especially in the first few weeks of owning your Apple IIe, are not unsolvable or irreparable. They may not even mean that something is wrong, but only that you do not know how to track down the problem because the manufacturer has not bothered to tell you how to do so. Your guiding principle should be not to panic. The solutions are often simple. Once you know them, the problems will remain solved. You may even apply the same general principles learned in one situation to new problems—even those involving a different program or computer. You will find that if you have a little patience with your Apple, it will become your best ally in getting itself to work and performing at peak condition.

Let's face it: Even Apple's own manuals can be hard to follow when you're unfamiliar with the jargon. And program manuals are often disorganized or written in advanced "compu-twit" language. They can even contain dangerous errors which could cause worse problems than the ones you were attempting to solve. And they often do not explain what to do when something goes wrong. The manufacturers of hardware and software are reluctant to admit that anything could go wrong.

The worst agonies usually occur during the first few days and weeks after you bring your new Apple IIe home. The impact is somewhere between bringing home a new baby and getting a new car. But when you get a new car, you don't expect to become a mechanic. Unfortunately, many computer owners have learned more than they ever wanted to know about their machines because no one else could help them. Solving computer questions can seem to require the expertise of an electrician, a telephone linesworker, a television repairer, an air traffic controller, and an emergency ward physician all rolled into one.

Although I mention bringing the Apple IIe "home," this book will discuss problems and solutions that are found in both homes and offices. All new owners will benefit from scanning the sections on moving your computer into its new home, software installation, and regular maintenance tips.

The advice in this book is based on a consensus of opinions I have encountered from experience and from consultations with manufacturers' representatives and technical support staff. Even so, there may be some variance of opinion in some areas—how often to clean your Apple IIe's disk drive heads, for instance.

Keep this book near your Apple so you can find answers fast. Look through it before problems arise, so you can avoid some of the most common human errors and be more prepared to deal with problems when they arise. Read through this book for the same reason: to be prepared in a crisis. It may help you to avoid doing something you'll regret; it will give you peace of mind. You will also save time, worry, and unnecessary repair costs.

Good luck, and good reading!

INTRODUCTION

IT'S NOTHING WITHOUT YOU

The author of the *Dune* books, Frank Herbert, has written a reassuring book about his encounter with computers, called *Without Me, You're Nothing.* The title carries a mixed message: Herbert's saying that computers are nothing but mindless machines, but he's addressing the statement *to* the machine. That's part of the enigma of computers. Even though they're inanimate objects we often relate to them in a human way.

JUST HOW INTELLIGENT ARE COMPUTERS?

Many of us remember HAL 9000, the rebellious computer in *2001* who was foiled in an attempt to take over the mission to Jupiter. HAL, the lovable Star Wars robots, and a host of successors and imitators have fostered the popular image that computers are able to talk conversationally with casual passers-by. This perception of computer intelligence can lead to amusing encounters.

A person will walk into a computer store, sit down in front of a keyboard, stare at the computer's screen, and type in a message on the keyboard, such as:

```
A>HELLO
```

CP/M-based computers will answer back with the question,

```
A>HELLO?
```

This appears to lead the person on, especially if he or she doesn't pay attention to the question mark. Encouraged by this apparent amiability, the person types in a longer message, such as

```
A>TELL ME YOUR NAME
```

the computer will answer back,

```
A>TELL?
```

This can go on for a while, with the human trying to find words which the computer knows, in order to converse with the machine. If the person is observant, he or she will notice that the machine is repeating the first word only, along with a question mark.

What really happened in the above exchange is that the computer has searched its memory unsuccessfully for programs called "HELLO" and "TELL" (if the first word of a computer command isn't in the memory, the second and third ones are ignored), and has tactfully repeated the unknown word with a question mark so that the erring human can see the mistake and enter the desired word correctly.

Your Apple IIe will put the questioner off with the "FILE NOT FOUND" message and end the matter right at the start. If you have no system disk in the computer, you will get the Integer BASIC message:

```
* * * SYNTAX ERROR
```

indicating that it's time to try again.

It is possible to get the machine to respond, but not in the way that the newcomer could guess. It would respond if we renamed a computer program "Hello" or "Tell." That would make sense to the computer, and it would go and run the program.

And that's the secret. The computer knows nothing other than information and instructions programmed into it by humans. If we design it to respond to certain everyday conversational words, it will. If we use a sound generator to imitate human speech sounds (available with a few computers), it will use them. But they have to be simple, and follow the basic "true/false" logic which determines what computers can do. However, conversing with computers using normal English speech will always be problematic. English happens to be one of the most complex, illogical languages on earth, not only grammatically, but phonetically.

Newcomers who want to converse with computers can try an amusing adult encounter in artificial intelligence—the electronic psychologist *Eliza,* developed in the mid-sixties at the Massachusetts Institute of Technology by Joseph Weizenbaum. This program is designed as a "non-directive" therapist and will give you surprisingly intelligent responses to your statements about yourself. To begin the program, you simply type in:

```
]RUN ELIZA (carriage return)
```

and in response you get:

```
]HOW DO YOU DO. PLEASE TELL ME YOUR
 PROBLEM.
```

After that, where the conversation goes is up to you!

Eliza is a program available in BASIC, designed to reproduce common human speech patterns, pick up key words following certain nouns, and generally direct the conversation toward finding out more and more about the person at the keyboard. For instance, if you say, "I feel sad," *Eliza* will respond, "Why do you feel sad?" After a page or two of these exchanges, however, you find that her vocabulary of insightful questions does have a limit. And her comprehension relies more on verbs than on a large vocabulary. If you say, "I feel sradh," she is likely to say, "Why do you feel sradh?" But *Eliza* is an entertaining and occasionally astonishing example of the advances and limitations of computer intelligence.

These limitations are good to keep in mind when your Apple seems to be getting the better of you. Remember, computers are *nothing* without you. They only follow your instructions—and you can easily learn how to solve your problems with your IIe. If you consult the checklists given at the end of this chapter before you get stuck, you'll know how to get the best out of your Apple. That's the way it should be.

THE CONCEPT OF FIRST AID AND YOUR APPLE

First Aid in the traditional sense refers to emergency aid which is given to keep someone alive until the doctor arrives. There are standard first aid procedures for the most common groups of injuries. You also learn different procedures for different symptoms, such as bleeding, concussion, and hypothermia. For you, any time your Apple IIe system isn't working is an emergency. There are also standard procedures for the most common computer problems. You will be able to find the most common symptoms and remedies in the following chapters. But the advice here isn't just temporary. It should take care of most problems once and for all. Most computer-related problems aren't defects or failures, but simply unexpected or unusual situations. Once you've recognized and remedied a problem, you'll know just what to do if the problem ever reoccurs.

I have adopted the medical approach: describing the *symptom* first, because that is what you will see. But a symptom can be the same for many different diseases, so it is important to give the right *diagnosis*. In some cases, I've given several possible diagnoses, and explained how to tell which one is correct. Once the diagnosis is determined, the correct *remedy* can be prescribed. By checking the chapter that covers the problem you're having, and matching the symptoms to those given in this book, you can find and fix your particular computer problem as fast as possible.

HOW TO THINK ABOUT COMPUTER PROBLEMS

Most people choose to avoid thinking about problems until they happen. The adage, "If it's not broken, don't fix it" most often is a good one. But it's worth the bother to acquaint yourself with the most common problems that could happen with your computer, if only for your peace of mind. Then, when things do go wrong, you will find it easier to go about solving them methodically. When you're new to computers, it's hard to separate the problems into hardware, software, or human error. If you follow the steps given below, you will find that this approach to analyzing your problems will solve your problems more quickly. It will also get you better service when you call troubleshooters with your problems.

Your Apple IIe is really a *system*, the interaction of a group of interrelated parts and conditions. When we try to solve a particular computer-related problem, we have to look at the whole system. In medicine this systemic approach is called *holistic*. It's a good approach to keep in mind for your computer, too. To solve problems, you have to look at the entire computer system. For example, the parts have to be correctly put together: the software must be installed correctly for the particular monitor and printer in use, and so forth. When there is a problem, we have to look at all the possible things that could have gone wrong, then narrow them down through the process of elimination. Sometimes what looks wrong on the screen is a symptom of something happening somewhere else in the system.

It is important to approach problem-solving in a methodical way. Each part of the system must be examined for the cause of the error: the hardware, the software, and your part in operating the system.

Just as the computer is a system, the process of problem-solving is also a system of strategies. You must organize your thinking according to these strategies. At the beginning, it is like scientific analysis: you rely on your concrete observations first. Later on, when you have had more experience tracking down problems, your instincts will be more developed and your systematic approach to problem-solving will become faster and more confident.

The most important thing to remember is that there is no point trying to solve the problem if you are in a state of panic.

Problem-solving requires a calm and alert attitude. You must respect the machine, and remember that there *is* a design through which the machine *will* work. I have learned that the best way is to try to clear my mind and calmly work my way through the steps described below. Haphazard problem solving can compound the confusion.

Define the Problem

First, what is the problem? Forcing yourself to start at the beginning, from turning on the computer, or from a point where you *know* everything was working. Clear your mind of assumptions. Remember that wise saying, "ASSUME makes an ASS out of U and ME." Try answering the journalist's key questions: Who? What? When? Where? to be sure you know exactly what problem you are trying to solve.

Define the problem by looking at your answers to these questions. Ask a friend or co-worker more questions about your description—they might see things you have missed.

Once you've established your problem as clearly as you can, ask yourself questions about how the situation developed. What was the last thing you did before the problem developed? Who used the equipment last?

When you have narrowed down the possibilities of what the problem might be, you can come up with possible solutions. Think through the reasoning behind your proposed solutions, and decide which one of them is most likely to succeed. Finally, try the solution out. If it works, you will be able to tackle the next problem more confidently.

Even if it doesn't work, you will have eliminated one REMEDY from your list of possibilities. In any case, you will have learned more about your Apple IIe system—which will stand you in good stead when other problems crop up (and they will!).

Know What You Want Your Solution to Be

Suppose, for example, you are partially successful in solving the problem of getting your printer to work—but it only prints in capital letters and you need it to print small letters too. The solution may be either changing your expectation and living with the capital letters, or getting a different printer.

When Is a Problem "Solved"?

"Solving" a problem may mean more than one thing. Usually it is assumed to mean arriving at a right answer, as in an arithmetic problem. When working with a computer system, a problem can be considered solved when your discomfort has been reduced to an acceptable level. Actually, the word "resolve" may be more appropriate. In a given situation, it may mean paying a technician $100 to restore a damaged, unreadable disk directory, learning to restore it yourself using a disk utility program (as my friend David did), or reformatting the disk and typing in all your lost work over again. Which of these solutions you choose depends on what you decide you really need, and what you're willing to spend (in time, effort, or money) to get it.

POINTS OF REFERENCE

Remember, the Apple is almost "empty" without programs in it. Each disk with programs on it has the capacity to turn the computer into a word processor, a calculator, a cross-filing indexer, or a game machine. Each program has different ways of using the controls on the computer's keyboard. That means YOU have to learn how to use them!

Computer problems often stem from misunderstanding a term used in a manual, or making the wrong assumptions about what a command or instruction will do. The term *format,* for instance, can refer to how the computer shapes the look of a word processing file, or it can mean the preparation of new disks for use, called "initializing" with Apple DOS or "formatting a volume" with ProDOS. Also, people usually learn a particular program first, and associate the other computer instructions they learn for different programs with those of that first program. Make sure that you have all of the terms or commands that could play a part in the problem straight. Making progress could depend on finding the right point of reference and working from it.

When you're at your wit's end, you have to take a quick break, sit down, count to ten, take a few deep breaths, and begin at the beginning. Take nothing for granted. Think of things you could have done another way. More than eighty percent of the time, it will suddenly hit you what went wrong. And you will think, "how could I be so dumb?" Try it and see!!

Some basic advice:

1. Remember, computers still don't make mistakes—but things certainly do go wrong!

2. OPERATING MANUALS: They are usually designed for reference, not for instruction. They tell you what should happen when you proceed correctly, but they won't tell you what you did wrong.

3. TROUBLESHOOTING: Remember, your Apple IIe is more than one entity. It is made up of many parts working together. When you encounter a problem, you must consider *all* the parts of the whole, for instance, the power supply to the unit, the screen and the printer; the cables connecting those parts and the keyboard to each other; the disk drives, the disks, the software—and the operator.

4. The disk operating system (ProDOS on your User's Disk or Apple DOS on your System Master Disk) makes it possible to run the programs on disks and acts as an allocator of your Apple's resources. The commands which make your operating system work are different from the commands which work in your various programs. Make a point of learning the common ProDOS, DOS 3.3 (or CP/M) commands as soon as possible. Knowing them will save you a lot of time and grief later.

5. Learn how to format disks and copy disks and how to copy single files. These are the most important things to know first. They are not easy to learn or remember when you are a new Apple user; the commands in the program you bought are probably easier to understand. The reasons you should know the DOS commands won't show up until later, when it's too late: like when you've wiped out your only copy of a master program or last year's tax records.

6. Take care of your disks and equipment and they will last a long time.

SYMPTOMS AND REMEDIES CHECKLISTS

The following checklist shows the most common symptoms you'll encounter as you use your computer. It's followed by a checklist to go through when things go wrong. You'll want to add more entries to these lists as you use your computer, or if you're using a special peripheral or software program.

Common Symptoms

1. Error messages such as "FILE NOT FOUND" or "SYNTAX ERROR."
2. Extra letters on the screen.
3. Nothing on the screen.
4. Computer can't find a file.
5. Computer can't read a disk directory.
6. Printer skips too many spaces.
7. Printer has garbled copy.
8. Printer margin creeps over.
9. Printer stops and starts printing erratically.
10. Printer prints uneven lines.
11. Computer exits a program unexpectedly.
12. Copy you are typing doesn't appear on the screen.
13. Computer doesn't respond to your keyboard input.
14. Screen appears lopsided.
15. Computer suddenly stops working.

When Things Go Wrong . . .

1. Don't worry that you don't know enough about computers. You are the one with the computer problem, and you can use your own resources to identify and solve it.

2. Defining the problem is often the most difficult part of solving it. Identifying the problem may include consulting with your technical support, but this cannot be your only alternative.

3. Consider all of the different possible identifications of the problem.

4. Review the steps or actions you took prior to the onset of the problem.

5. Make sure to write down what you do as you try to remedy the problem.

6. Look carefully at the documentation, manuals, and brochures, for any references to the problem you're having.

7. Be sure that your system (the Apple IIe, screen, printer, and peripherals) is properly set up.

8. Remember that you can't hurt your computer by hitting a wrong key but you *can* damage a program or master disk by doing the wrong thing at the wrong time.

9. Be sure that the software you're using is the correct version and has been installed for the Apple IIe.

10. If you have a software problem with a program stored on a disk, make a copy of the entire disk *before* experimenting with possible solutions.

11. Use this book to develop a list of the possible problems that your computer's symptoms could indicate. Then work your way through this list, trying to eliminate each of the entries as a possibility. In most cases, this process will result in your identification and solution of the problem. If you reach the end of the list without hitting on the correct problem and solution, call your source of technical assistance for advice.

12. If you do end up calling for help, it will make the job of the resource person you call much easier if you have gone through this process first. You will get a much more sympathetic hearing, and probably better service, than if you call at the first twinge of computer panic.

HARDWARE PROBLEM CHECKLIST:

1. Is additional hardware, such as a second disk drive, or the extra 64K of memory that comes with the 80-column card needed to run your program?

2. If you recently purchased a new component (such as a modem), is it connected correctly?

3. Is the power on to every part of the system? Check your power outlets with another appliance to see if they're working. Disconnect and reconnect your main power plugs and try again.

4. Are all the cables connected to the right connectors? Check the disk drive, main unit, monitor, and printer connections.

5. If you have been using your Apple for a while, do your drives need head cleaning?

6. If the screen is blank, check the brightness knobs and power supply.

7. Have you rebooted (in most cases Control-Reset) or turned the machine on and off?

SOFTWARE PROBLEM CHECKLIST:

1. Put your program disk in drive 2 (with the write-protect tab on) and Apple DOS disk in drive 1. Run "CATALOG" or "VERIFY *filename*" to see if the program disk is Apple-compatible and to make sure it isn't defective.

2. Is there a message (either an error message or a direction) on the screen? Do you understand what it means?

3. Do you have the right version of the software and the right disk format for the Apple IIe? Check the packaging.

4. Is the program you're trying to run well tested and known to work on the Apple IIe?

5. Do you have a disk which you know to be working in drive 1 (that is, one with DOS or other operating system that runs the Apple IIe)?

6. Are you sure you're using the right disk? Have you checked the disk directory? Have you tried other disks?

7. Do you have write-protect tabs on your program that shouldn't be there? In other words, can your program create any disk files it needs to run?

8. Has your software been installed? Some software needs to be "told" about the configuration of your Apple IIe system before it will run properly.

9. Have your software and computer been correctly configured for your printer?

10. Did you mistype the command or file name?

11. If your file is on drive 2, did you specify that drive in your command?

12. Did you type in your file name with exactly the same spelling as on the directory (including, for data files, the three-letter optional ending or file extension)?

13. Are you mistakenly trying to use commands you remember from another program which don't work in the one you're using?

14. What do you see on the screen? What's unusual about the display?

15. Do you have a formatted disk in the data drive? Is that what it needs?

16. Is your disk defective? Use VERIFY to see.

17. Is your disk inserted in the drive correctly, and is the drive door closed?

Unfortunately, there's no way that this book could list *all* of the problems you may encounter. If it did, it would be as thick as those fat medical tomes that are too heavy to carry out of the reference section of the library.

Throughout this book (and at the end of almost every chapter) you'll see lists, like those above, that briefly describe the most common microcomputer problems. The end of each chapter also includes a series of questions that will help you clearly define your difficulties.

If you can't find your specific problem in the List of Symptoms on page vii, look at these lists and read the related entries in the text. You can often pick up incidental information that will give you the clue you need to solve your problem. The process will also help you organize your thinking about the problem, which can be the key to its solution.

1

COMMON SETTING-UP PROBLEMS

The worst agonies for a novice computer user usually occur during the first few weeks after the new machine arrives. That's why I think of the event as a cross between having a baby and getting a new car: a new baby changes your life and can cause a lot of stress (as well as many good things) in the process; a new car is fun to drive and has interesting gadgets and features to learn about. But when you get a new car, you don't expect to have to become a mechanic. With computers, it's a different story. Unfortunately, many computer owners have learned more than they ever wanted to know about their machines, because no one else could help them figure out how to solve their problems.

NO NANNY IN THE HOUSEHOLD

With a new baby, some fortunate new parents have the luxury of a nurse or nanny who knows what to do when Baby won't stop crying. Nanny knows when it's nap time, lunch time, or playtime. She can whisk in, speak a few soothing words, and whisk the trouble out of the way. There are so many times at the beginning when we personal computer users long for someone to whisk our computer troubles away. Instead, we sit there, dejected and perplexed, staring at our Apple, our manuals open before us. But you can avoid most of this stress, or even panic, by preparing the computer's "nursery" before the "blessed event."

There are a number of things you can do before your computer comes home to make its arrival easier on yourself. These include making an appropriate choice and adequate preparation of a place for the computer; preparing yourself to install and connect the component parts (or arranging for an expert to do it); and planning your first encounters with the new member of the household.

WHAT TO DO BEFORE THE COMPUTER COMES

Choose a room without a shag rug, *please*! Static electricity and dust are your computer's enemies. Any kind of rug, especially wall-to-wall shag, is a potential threat because of static build-up and dust. If you can't avoid putting your computer in that situation, here are some things you can do to lessen the hazard.

Fight Static Electricity

Use anti-static spray on the entire rug and on the curtains, if there are any. Get an anti-static mat base or padding for your Apple's desk or table and another for under your chair. You can spray some anti-static spray onto a lint-free cloth (*never* spray anything directly on or near the computer *or* the disks!!) and wipe the screen and keyboard gently with it. This will discourage the attraction of dust onto your screen and your keyboard. (Remember how your television screen attracts dust like a magnet? The same thing happens with your computer screen.)

If you happen to forget about static electricity build-up and accidentally touch a disk and "zap" it, that disk could be so seriously damaged that you won't be able to read anything (such as your Great American Novel) or run the programs you had stored on it.

If there is a program in the computer Random Access Memory (RAM) when you touch the computer itself and "zap" it, you could not only wipe out the computer's memory completely, you could also damage the delicate circuits on the computer chips.

Therefore, if you think you are in danger of picking up a static charge and passing it on to your computer or disk, touch some other metal object first (doorknobs always work for me) to "discharge" yourself.

Guard Against Dust

Keep your computer and your disks covered when you aren't using them. If you don't have a proper cover at least cover the computer air vents and the disk drive openings to prevent dust from seeping in. Vacuuming stirs up dust, so it is especially important to keep your disks, disk drives, and main computer unit covered when you're vacuuming the room the computer is in. Use a heavy green garbage bag as a cover, if necessary, although dust covers fit better and are also more static-resistant.

Plan Enough Desk Space

When you are choosing the place for your new Apple, make sure you have enough room for the *footprint*: the amount of surface area your computer, including the main computer unit, the disk drives, monitor, printer, and any other additions, will take up. Many people make elaborate delivery and room location arrangements without checking for power outlets or the dimensions of the system they're getting. When they go to set up the equipment they discover that their desks or tables are the wrong size and they are going to have to rethink their plans entirely. That can mean a delay in setting up the new equipment and cause problems right from the start.

The ideal table or desk surface area is at least 24 inches deep (preferably 26 or more). With this amount of room your unit and monitor can be placed for maximum individual comfort. Behind the desk, there should be room for the various cords coming out of the back of the IIe: the cables for power, disk drives, printer, modem, and monitor must be able to go to their various destinations without danger of being pinched, caught, and pulled out. Sufficient space behind and beside the main computer unit and the disk drives is also important for ventilation.

You will need enough room to put your printer next to your IIe and still leave space for handling the printer paper. Therefore your table or desk top should be five to six feet long: five feet if you have a narrow carriage (12-inch) printer; six feet if you have a wide carriage (15-inch) printer. If you are planning to use continuous-feed paper, you will need at least eleven or twelve inches of room behind the printer for the flow of paper. If you have a tractor feed, you should get a stand to put the printer on, so that the flow of paper out of the printer has enough height for a proper drape and fold. Otherwise your paper will bunch up on exit and interfere with the proper printing process.

Since you'll be referring to manuals and other sources while working at the computer, allow convenient room for these materials.

Computer furniture often includes a separate printer table with a cut-out slot for paper flow. A separate table is a good idea not only for flexibility of furniture arrangement, but also for safety—some printers vibrate while printing and that could affect your disk drives. If your computer and printer have to share a table, put the printer on a thick pad to lessen the vibration and noise. You can also invest in a soundproof cover, but these are expensive and are recommended only for areas where the noise will interrupt your or other people's work. The cover fits over the printer like a greenhouse over a garden (you can see the printing through a window) and naturally takes up much more room than the printer alone.

Your floppy disks should be convenient to your desk so you can flip through them and find the one you need, when you need it. Many people use a see-through desktop storage container, and of course that takes up room. Some computer desks have built-in drawers or covered sunken receptacles for disk storage. The only exception to storage nearby should be your master disks and safety duplicates: put them in a safe place well away from your everyday working disks.

Close to Power Outlet

Your computer obviously has to be near at least one electrical outlet. All the computer components should be on the same circuit. Your best plan is to use a power strip with a line filter/surge protector, an on-off switch, and at least four outlets to accommodate everything (computer, monitor, printer, and modem).

If you have a modem, the brand you have may need an external power source. It will also need to be near enough to your telephone outlet to be plugged into your telephone line. Some modems are now built onto a serial interface card, so that you will only need to install the card and attach a modular telephone cable to hook it up. The cable that connects your Apple to a modem can range from one to six feet in length. If necessary, you can use longer cables without sacrificing transmission quality. (You cannot do this with many other component-connecting cables, such as parallel printer cables, because the signal is not as strong as in the serial cable.)

Away from Direct Heat

Try to place your equipment away from heat sources which can affect its operation. Face it away from direct sunlight to avoid glare on your screen. Generally, disks and computers are comfortable at the same temperatures we are, but some of my cold-blooded friends who love desert temperatures have tolerances higher than those I want for my computer. High summer temperatures (over 85 or 90 degrees indoors) may affect the Apple or the disk drives—they can make perfectly good machines go temporarily batty. Although the Apple IIe isn't as sensitive to heat as older Apples were, the installation of several interface cards can cause the temperature to rise. By the way, if you are working in a very warm room and your computer begins behaving strangely, try shutting down for a while. Turn off your computer altogether, and give it a rest. But if it's a choice between having either warmer air or having an air conditioner constantly turning itself on and off and creating interference, it may be better to stay with slightly warmer temperatures.

In regard to temperature, transporting your Apple and disks in your car should be treated the same way as transporting children or pets: don't leave them in a hot, enclosed car! Disks with valuable information on them have been known to start off a journey properly stored in their boxes and sleeves, but end it devoid of any intelligible material after sitting all day in a hot car. One experienced programmer, who lost a program he had just written (fortunately, he had a backup version, even though it was without the finishing touches), referred to the disks he retrieved from his hot car as "fried." They looked fine, but there was nothing on them anymore. Be warned—and be careful!

A final word about environmental dangers. In high-smog areas and in industrial areas where sulfur dioxide (one of the major ingredients in smog) is in the air, your Apple's exposed metal parts (cable connections and even chip connectors) can become corroded. For that reason, in smoggy areas don't set up your equipment close to an open window and avoid over-humidifying your computer work area. (See Chapter 2 for treatment of corrosion.)

NOW THAT YOU HAVE A PLACE FOR EVERYTHING . . .

Once you have settled on a place for your equipment, and you have ensured that it will be safe, comfortable, and convenient, please don't move it around. It's not healthy to bump or jostle all those connections soldered to your interface cards, the main circuit board, and your cables.

SETTING UP YOUR EQUIPMENT

It's not difficult to set up your Apple to get it to do what you want. The first step is to make sure you have all the hardware set up and connected properly. Unless it is, nothing else will work. Carefully follow the instructions that came with the Apple. If you run into problems, check out the connections on an installed Apple, or talk to someone who's hooked up Apples before. Then make sure you have all your software at hand and are ready to make the recommended backup copies as instructed by your software manuals, before proceeding further. To get your Apple to do what you want, you have to learn more about it.

WHAT'S LIKELY TO GO WRONG?

The most common first-day mistakes are generally those involving connections: power cords, interface cards, printer cables, video cables. This is often the time when the screen is thought to be broken because the brightness knob has been turned down accidentally; when the ribbon is not in the printer or is just loose enough not to work; when the packing braces are not out of the printer, when that little phono cable attaching the TV screen to the computer unit is loose. Now, too, is usually the time people accidentally erase the only disk which will enable them to make the backup copies they are told to make before using any of their software.

HOW TO AVOID THESE STUMBLING BLOCKS

Take a good look at how the different parts of the Apple fit together *before* you get it home. Get your salesperson to explain all the parts. Or, if you can, get your equipment delivered and set up for you. Make sure it's working and you know how to turn it on and off before the delivery person leaves. To help avoid accidents, I sometimes recommend that my customers come in and have their salesperson show them how to make copies of their original software in the store, where assistance is readily available. You may have to pay extra for this service but it's more than worth it.

Another option is to request that your dealer make backups and install your main program. It will save you a lot of time and possibly anguish in the first few days. You have so much to learn at the beginning, and the technical details of copying software are harder to grasp than the actual working of the programs you're interested in. So it's better to become familiar with the actual programs first, and work into the more technical stuff, such as copying files, later. But if that isn't possible, make sure you make a backup before attempting to install your software. (More on this in Chapter 6.)

Don't become a victim of another common pitfall: buying your Apple to help accomplish a crisis assignment, thinking a computer will make your work easier. Under these conditions, you will be compounding your problem. Trying to learn a complex new machine, along with trying to get your assignment done, will be disastrous. When you get your Apple, try it out on easy projects first, or even one you have already completed to get the feel of working with it and to resolve any unanticipated problems. Then go ahead and move on to a major new project.

Many people overlook the System Master Disk with DOS, which contains the disk initializing and file copying programs, in favor of a specific program. As soon as you feel confident about turning the equipment on and off, and loading disks and programs in and out, take time to learn the most common utility programs—initializing or formatting new blank disks; copying disks and copying individual files from one disk to another. Often my clients ignore this and work only with the software program they are most interested in; then they are at a loss when they need a new disk inserted at a crucial moment and don't have one pre-initialized or formatted, or they have to copy a crucial file from one disk to another but don't realize it or don't know how to do it. For further information on all these essentials, read Chapter 6.

IF YOU HAVE TO MOVE YOUR EQUIPMENT

If, by some unfortunate circumstance, you are forced to move your equipment after you have it all set up, plan the move with care, as follows.

Try to repack the equipment in its original containers surrounded with the original packing material. That's the best way to protect your computer from temperature extremes, dirt, and shock. If you have thrown out the packing boxes, at least cover the exposed parts of your Apple and printer with plastic and then with a tarpaulin or blanket.

Packing your disk drives is most important. The drive heads are easily thrown out of alignment. If you have not saved the packing boxes, wrap the drives securely and guard them against shock. Protect the drive heads by reinserting the cardboard reinforcements into the disk drive slots and closing the doors. (Do this only after you are absolutely sure the power is turned off. Unplug the drives first.)

Take a good look at how your equipment is set up before unplugging the connecting cables. If there are similar cables which you feel might be confusing, attach clear labels before unplugging, naming the connection (e.g., "to printer") or matching colored stickers to each connection—red for printer, blue for modem, green for disk drives. You may want to mark your interface slots anyway, in case you ever have to remove them. Even if you *think* you know where everything belongs, mark equipment—familiar things are sometimes hard to identify with a change of context or locale.

2

HARDWARE FIRST AID: THE MAIN UNIT, KEYBOARD, AND SCREEN

THE BLANK SCREEN

An associate of mine, Barbara, a sensible and competent computer training and installation specialist, went to an attorney's office to set up his newly purchased computer equipment and install his new word processing program. The office was in another community a long distance from her home store and she was careful to take everything she would need with her, including extra cables and blank disks, and even a pair of pliers and some screwdrivers, just in case.

After unpacking everything from the factory boxes, setting it up on a desk, and connecting the components, she plugged in the equipment, turned it on, and inserted the computer's main system disk. The machine remained blank: no message whatsoever. With a few reassuring words (of the "we're experiencing some light turbulence" kind) to her anxious client, she continued to try this and other disks from the new package accompanying the computer. She had never had a problem with this company's system master disk before, but thought that perhaps this might be the exception which proved the rule.

When she looked to see what other disks she might be able to try, she realized to her chagrin that she had only one system disk. She called her headquarters, asking if there was another customer nearby whose disk she could borrow. There was none in the area. She prepared to break the news to her client and take the long drive back to her home store for a duplicate system disk.

As she was packing up to leave, a thought occurred to her. It was absurd, a long shot, but still worth a try. She went over to the computer, found the brightness knob, and turned. Sure enough, there was the opening message with cursor faithfully blinking, as it had been all along. The brightness knob was simply turned down all the way. The day was saved, even if Barbara's face was a little red.

In the above anecdote, Barbara didn't think that anything could be wrong with the computer hardware; she assumed that it had to be her disks. In fact, it turned out to be the brightness knob on her video monitor. Because new computer components are usually well made, she had not considered them as the source of her trouble. That, she thought, would have been too simple. Now she knows, and you know, too, that it's important to consider everything, even the simplest things, when trying to solving a computer problem. In this chapter we will take a look at your Apple IIe hardware components, what to expect from them, and the common problems and solutions you may encounter.

INSIDE THE APPLE IIe

The Apple unit contains the main circuit board with the heart of the Apple IIe, the 6502B chip, as well as memory chips, resistors, and diodes. These are implanted on a wide, flat plastic board, interconnected with tiny circuits. Also in this main unit is the power supply, which converts the electrical current from the wall plug to a much lower voltage DC current and distributes and regulates it to all of the internal memory circuits, interface cards, disk drives (and some types of modems).

Your unit has slots that hold up to eight interface cards, so-called because they're light, relatively small, and thin. Which cards you use depends on which functions you want on your Apple. The cards can include the RGB color video control, 80-column adapter, disk drive control, parallel printer control, modem or communications interface, and other specialized function cards, such as a sound generator or analog device interface.

The microchips, diodes, and resistors on the main board, connected by tiny circuits, make up the brain of your Apple. Because the Apple was the only accessible (low cost, mass market) microcomputer available on the market at first, there is a tradition of electronics and computer programming buffs who want to be able to take it apart and rewire it for their own adaptations. Accordingly, there are many books published by experts which go into great detail as to which chips and PROMs (Programmable Read Only Memory) control which functions. Going further into detail about the individual chips and their functions would be going far beyond the scope of this book. For our purposes of explaining what commonly goes wrong, all you need to know is that, occasionally, there will be a loose wire leading from a circuit board to the power supply, the disk drives, or the interface cards. Occasionally a chip works its way loose from the main circuit board ("motherboard" in computerese) after the unit has been moved. Loose circuit connections or faulty circuits can be very difficult to track down without the proper diagnostic testing software and equipment; if you suspect that such a malfunction exists, leave the detective work to an experienced technician.

Most people have one or more interface cards installed on the main circuit board. The interface cards provide you with the means for your Apple to "talk to" other electronic devices, usually referred to as "peripherals" because they are peripheral to the main circuit board. These cards are placed in the eight slots at the back of the main circuit board. On previous models they were numbered 0 through 7; on the IIe they are identified as the Auxiliary slot, slightly down and away from the others (into which the 80-column card goes), and slots 1 through 7.

Certain cards must be in certain slots or they won't work (or worse, they may cause your computer to malfunction). The disk drive controller card (which can handle two separate Apple disk drives, or Apple's Duodisk II unit) goes in slot #6. If you buy more disk drives, you can put a second disk drive controller card in slot #5. (You can put a third disk drive controller card, or the ProFile 5 megabyte hard disk drive controller, in slot #4.) The serial or modem card is usually inserted in slot #2 and the parallel printer card in slot #1. If you decide to obtain a CP/M adapter (so that you can use the popular CP/M operating system), you can buy the kind which combines the 80-column display with the CP/M option or you can buy the CP/M adapter separately. If you buy the two combined, the card will go into the auxiliary slot, where the 80-column card usually goes. If you buy a separate CP/M card (perhaps because you already have Apple's Extended 80-column card in the auxiliary slot) put it in slot #4. If you've been keeping count, you'll find that slots #3 and #7 are not accounted for. Slot #3 is not used. Slot #7 can be used for special-purpose cards like the ones mentioned above. The separate external game control port on the back of your Apple IIe is available for joysticks or game paddles.

The so-called "edge connectors" on your interface cards (the parts that insert into the slot on the main board) can cause trouble from time to time due to corrosion. If one of your plug-in peripherals starts acting a little strangely, suspect the edge connections. Even though most cards are now gold-plated to avoid the problems of corrosion at the contact points, there still can be a build-up of oxidation which can affect the electrical current flow through the circuits. That's why it's a good idea to learn how to clean your edge connectors. You can even do this as preventive maintenance before you encounter the problem. It's very easy. With the power off to *all* your components (and make doubly sure it *is* before you remove the Apple's lid), lift out the interface cards one at a time. Then, using a very soft eraser (the end of new, clean pencil eraser or art eraser will do nicely), rub gently across the connection edge. When finished with each interface card, return it to its slot with a gentle rocking motion. Be sure you return the right card to the right slot: label them or use small round stickers to make it easier on yourself. Do not do this too often; the more you handle these delicate components, the more chance there is for a microcircuit to break.

Because so many hundreds of products are manufactured for use on Apple II series machines by companies other than Apple, the specifications differ. When you order an interface card to use in your Apple, be sure you test it to make sure it will work the way the manufacturers claim it will. If necessary, take your unit to your dealer to test the new card on the spot, or arrange to return the card if it doesn't function as advertised. Another problem to watch out for is combining cards by different manufacturers. Their slightly different specifications may cause you difficulties when you are using them together, although separately they may work just fine. Again, the best way to avoid this is to test a new card in your system before buying it.

When you have three or more interface cards installed in your Apple, get a cooling fan for the inside of the unit. The main circuit board itself doesn't generate too much heat, but the additional cards, together with the power supply, may heat up sufficiently to affect the operation of the whole system.

For those who are interested in eventually learning intimately about the circuits, make sure your printed reference material is correct. There have been several changes in the electronic components and keyboard design for the Apple II series and you must make sure you are dealing with the correct version. In computer manufacturing, there is a tendency for hardware improvements to be done with no warning. The reference literature often takes a while to catch up.

Try to avoid turning your Apple on and off frequently. You may end up turning it on and off a lot at first, when you get stuck in programs and your "Control-Open Apple-Reset" command (we'll explain this later in the chapter) isn't enough to clear the memory and let you start over again. But the constant on-off movement isn't good for the board connectors and circuits, and it gives the power supply and switch an unnecessary amount of work to do. When you do have to turn your unit off, be sure to wait a few seconds before turning it back on.

You are far more likely to encounter problems with your software or your disk drives than with your main computer circuits. Although casual observers tend to think of a computer and its actions in terms of its CPU, it must be viewed as a whole system; a hardware problem is more apt to be coming from one of the interdependent components making up your Apple IIe system. But the usual way we are told by the computer that something's wrong is by what we see and analyze on the computer video screen.

THE SCREEN

There is a saying that our eyes are the windows of the soul. We could say the monitor or screen is the window of the computer's "soul." It is the main device by which we can see and understand what the computer is telling us. Often new computer users don't really pay attention to their screens. They can miss the brief error messages the computer sends. That can be fatal.

The way things look on the screen obviously depends on what sort of program you are running—a game, accounting, word processing, spreadsheet, or mailing list. You must watch the screen carefully to analyze what the computer is doing, and to be ready to "talk back" with the keyboard. As you type in commands or information, pay attention to what you see on the screen. When you see the characters you've typed, you know that what you've typed has been received well enough to be "bounced back" to you on the screen.

Your Apple IIe has either a color or a monochrome monitor. The monochrome (one-color) screens can be green, amber, or black and white; color screens are either RGB (separate red, green, and blue signals sent from the computer to the screen along separate wires) or composite (red, green, and blue signals sent together). You may choose which kind you want to use; it will depend to some extent on what you want to do and your budget. For instance, an RGB color monitor shows a much clearer image than a composite monitor for 80-column word processing, but the extra cost of purchasing the separate RGB color controller card may not be worth it.

Some people choose to hook their Apple unit to their television set, using what's called an RF modulator (the same type of connecting cable you use to hook up a TV to a videotape recorder). However, the quality of a television's display is not as good as a computer monitor's display, because there is more precision engineering built into a monitor intended for computer display, making letters crisper and graphics cleaner. Besides, home television sets are usually needed for their original function. Family conflicts are likely to develop over whether to watch TV or to use the computer.

Are Computer Screens Really Dangerous to Your Health?

There have been many studies of physical danger allegedly caused by radiation from computer video screens (called VDTs—for *Video Display Terminal*, or CRTs—for *Cathode Ray Tube*). The general consensus seems to be that the bombardment of electrons (radiation) emitted by a monochrome computer screen is much slower and lighter and therefore less harmful than radiation from a color television set. In fact, tests of standard Apple monitors have not picked up harmful radiation.

The stress and physical strain associated with working on computer programs are the main culprits. A person working at a computer gets so intense—even computer game playing is intense—he forgets that he's been staring intently at the screen for the last three hours or that his body is in an awkward position. Home computers are often not set up with their screens at a comfortable height for viewing or the keyboard set at a comfortable elbow level. They are usually placed on existing furniture. The chair is likely to be a kitchen chair not designed for good posture or for long periods of sitting in one position. Back and neck pains, eye strain, fatigue, and headaches can result.

To help avoid discomfort while working with your Apple, get up and walk around every so often to allow your body to recover from physical strain. Some people like working with the screen brightness knob turned well down. A comfortable chair is obviously a good investment if you plan to spend many hours in front of the computer. Providing glare-free, indirect lighting can also help.

THE KEYBOARD

While your computer's video screen allows you to see what your computer is saying, the keyboard is your method of talking back to the computer. Previous Apple keyboards have been rightfully criticized for their cramped, awkward, and limited design. Your new Apple IIe keyboard design is better than previous ones—it contains arrow keys and more special function key options. Make sure reference materials describe the Apple IIe keyboard and not that of a different model, such as the Apple II+ or the old Apple II. This potential for confusion is slightly compounded by the fact that the Apple IIe keyboard itself has had four different manufacturers, but this is of more concern to the technicians; the overall design is the same.

A computer keyboard must combine the symbols of a regular typewriter with other computer control keys to give you as much flexibility as possible in transmitting commands and codes. If you are a touch typist, any new keyboard design may take an hour or two to get used to; after that, you should feel at home on the keyboard. The worst problem in this regard arises when there is a lot of moving back and forth between the new computer and an older, more familiar machine such as a typewriter. Then the old patterns are harder to change. This is especially true in an office where typists are typically expected to churn out the same amount of work as usual, while learning a new keyboard as well as a new system. People under this kind of pressure will often abandon the new machine in favor of the more familiar typewriter, and not want to make the conversion to a computer. Often this happens when the typist is not consulted in the purchase of the computer; the machine is forced upon the typist by the boss. The resulting resistance is unfortunate, because computers can make repetitive word processing tasks much easier.

If you are unfamiliar with regular typewriter keyboards and feel lost in front of your Apple, you may want to invest in a typing program such as *Master Type* (from Scarborough) or *Typing Tutor* (from Microsoft) which will teach you basic touch typing keystrokes and give you drills, just like a typing class. It's a good way to learn touch typing.

Your computer keyboard is very sensitive; you don't need to press hard to have the symbol appear on the video monitor, or to make the program respond. You will have to be careful at first not to hold the keys down, which can cause the letter, the arrows, or, worse, a command to be repeated. Holding down a key or repeating it can jam the communication between the keyboard and the CPU and you may have to reboot. So go lightly with your keyboard touch.

REBOOTING: CONTROL-OPEN APPLE-RESET

When you *boot* you're basically turning on the computer. So *reboot* literally means you're turning it on again. In reality, however, you haven't turned the power off when you reboot, but you've made the computer clear the computer's RAM and circuits just as if you had.

The term "boot" comes from the term "bootstrapping," which is engineering talk for the process of running a series of routines which result in copying the computer's disk operating system (DOS) from a peripheral device (such as a floppy disk drive) into the main memory of the computer. It refers to having the computer "pull itself up by its bootstraps": a bootstrap, in this case, refers to the first sector of information the computer's disk drive head encounters on Track 0 of the disk, which it loads into the RAM or active memory. That's what puts the DOS 3.3 or ProDOS start-up message on the screen. Rebooting simply means repeating this process while the computer is running.

If you reboot while a program is in the memory or running, you will cause the computer to clear out its memory—and you will lose anything you haven't already stored on a disk. With the Apple, this is designed to happen both when you turn it off and on and when you hit the Control–Open Apple—Reset keys simultaneously. I usually hold down the Control and Open-Apple keys together and then hit the Reset key once briefly, then let go of all three immediately. That combination of keystrokes will clear out the RAM and send the computer's main disk drive head to its "home position." You will see the usual DOS or ProDOS start-up message, waiting for your next command. (Unless you have a special auto-loading program, in which case the program will do its own start up routine.)

The computer's response should be immediate—the screen should empty. If this doesn't happen, it probably means the keyboard buffer is full and cannot take any further input; perhaps the computer's lack of response in that case was what prompted you to reboot in the first place! The only thing you can do when rebooting doesn't work is turn the computer off, wait a few seconds, and turn it back on again.

HOW TO USE THE CONTROL AND ESCAPE KEYS

Usually, you hold the Control key down while you hit a second key. The Control key, combined with a regular keyboard letter or symbol key, sends a different command to the computer than hitting just the alphabet key. The Control key increases your options for commands.

The same goes for the Escape (Esc) key: It is used in combination with other alphabet or symbol keys, but instead of holding it down while the second key is hit, you usually hit the escape key first, let it go, and then hit the second key. Control is usually used in ready-to-run, popular programs, whereas Esc is used to send machine-language code messages to the computer, printer, or modem.

PROBLEMS: Main unit and screen

SYMPTOM: There's nothing on the screen.

DIAGNOSIS #1: The supply of power to one or all of your components is off.

REMEDY: Check that both the system unit of the Apple (the CPU and disk drives) and the monitor are plugged in and turned on. It is easy to turn one on and forget the other. If that's the problem, it's best to turn off both components and turn them on again, together. (Also check to make sure the outlet you are using is working correctly.)

TIP: Be sure to use a grounded, three-prong cord, preferably with a "noise" or "surge" filter (devices that filter out the power surges and interference from other appliances and motors which can hurt your computer) built in; if you use a power strip, get one with four to six outlets so you can plug in all your components. Some of these strips have a "master" switch that controls all of the outlets. Then you can use just one main switch to turn everything on and off. If you don't have a line or noise filter, be sure to plug your computer into a three-prong, grounded outlet. Otherwise you risk frying the insides of your computer if a power surge hits.

DIAGNOSIS #2: Your brightness knob is turned down.
REMEDY: This may sound ridiculous, but you'd be surprised how often monitors are shipped with this control turned down, or how easy it is to accidentally turn that control down. Many a panic has been resolved with this brilliant piece of detective work.

DIAGNOSIS #3: The connecting cable from your Apple to your video monitor is loose.
REMEDY: Make sure that the cable connection between your screen and your CPU is placed properly. Even a slightly loose connection could be enough to cause trouble. Occasionally you may want to unplug and reverse the ends of the cable (especially if you have a monochrome CRT with a simple one-prong phono plug). This seems to prolong the useful life of the connectors.

DIAGNOSIS #4: The signal to the screen is jammed.
REMEDY: Use your reboot/reset command. Hold down the Control, Open Apple, and Reset keys. This procedure usually frees the screen. If it doesn't, simply turn the computer on and off again. This way, any random signals that are wandering between the two components (and blocking the good signal) are eliminated.

DIAGNOSIS #5: The disk you're using isn't a system disk; that is, there is no copy of DOS on it to tell the computer what to do.
REMEDY: Try another disk. Usually an error message will appear on the screen to tell you if you have used a "non-system" disk.

DIAGNOSIS #6: Your disk drive door is not closed correctly.
REMEDY: Close the door, and reset the computer once it's closed.

SYMPTOM: All you see on the screen is odd or meaningless symbols.

DIAGNOSIS #1: You might have a cable connection problem, so that only a portion of the video signal is getting through to the video monitor.
REMEDY: Secure the video cable and then try resetting.

DIAGNOSIS #2: Your disk is not positioned correctly in the drive.
REMEDY: Insert your disk into the drive with the notch facing to the left, the open part of the disk toward the back of the disk drive, and the seam side of the disk facing down.

TIP: Always put your labels on the top of the disk. This allows you to see the labels easily.

DIAGNOSIS #3: The disk was not correctly formatted for your Apple: it was formatted for a different computer or for a different version of DOS. It also may have been initialized or copied incorrectly, or it may simply be faulty.
REMEDY: Check to make sure that the disk you're using is the one you intended to use. If you haven't used it before, you may have copied it incorrectly. Reinitialize the disk and recopy the program you were trying to use when the screen symbols came on. If the same thing happens, try a fresh disk. If it works, discard or return the faulty one.

TIP: Label your disks correctly as soon as you format them. Do not label them on their envelopes; it's too easy for disks to get separated from their original envelopes. Remember that floppy disks can usually handle up to 105 file names in DOS, so organize your disks and file names into categories according to the programs they're used with, or according to general subject matter. It's also a good idea to label the disk with the date on which a major program or file was transferred onto it.

TIP: If you do have trouble with a particular disk, give it a second chance by reformatting it. If it still seems to be the cause of errors, discard it or return it to the place you bought it. Some disk manufacturers have warranties on their disks (and you pay for that). With top and mid-line disks, the fault rate is less than 1 percent.

DIAGNOSIS #4: Static electricity has caused a problem in the Random Access Memory (RAM) section of the system unit.
REMEDY: Remove your disk and turn your Apple completely off. Check to see if there is any static-causing material nearby,

and make sure you are "discharged." Wait a few seconds, turn on the Apple, and re-insert the disk. Reload the program. If you do work in an area prone to static, you should definitely take precautions against it. Use an anti-static spray on the rugs. Spray or sprinkle some on a lint-free cloth (available at better computer and office supply stores) and wipe the screen with it. If you tend to pick up static, try to remember to "discharge" yourself on something metallic prior to touching any part of your computer or disks.

TIP: See Chapter 1, Common Setting-Up Problems, for more details on protecting your equipment against static electricity. Not only will static damage information and programs saved on the disks, but it is capable of damaging the hardware circuits. Don't forget to make sure your computer hardware, including printer, is grounded by three-prong wall outlets.

DIAGNOSIS #5: There is a faulty connection in one or more of the keys on the keyboard.
REMEDY: Turn the computer off and on again and see if the problem persists. If the same symbols keep coming up, try to isolate them in relation to keys on the keyboard. If this is a true connection fault, you will have to take the keyboard in for repairs; your technician will replace the faulty key assembly.

SYMPTOM: An error message is displayed on the screen.

DIAGNOSIS: You have probably hit an accidental combination of keys which has instructed the Apple to do something it cannot do; the result is an error message.
REMEDY: Make sure that you understand which program is giving you the error message so you'll know how to proceed. Is it an error given by the program you're working with? An Applesoft BASIC error? A ProDOS error? You should be able to tell this from the way the message is displayed. Applesoft BASIC, for instance, shows you the most common errors as

```
?SYNTAX ERROR
```

while ProDOS shows you the same message as

```
SYNTAX ERROR
```

without the question mark. Some of the error messages mean the same in both DOS 3.3 and ProDOS, while some apply to only one or the other. Look up the corresponding error (and code number if present) in your owner's manual.

SYMPTOM: When starting up the computer, you get a message saying "APPLE II" and nothing more.

DIAGNOSIS: You have not booted up the computer with your DOS 3.3 System Master disk in drive 1, so the computer is falling back on its built-in ROM message.
REMEDY: Make sure you have a disk with DOS or ProDOS in drive 1 and that you have put it in correctly. (See Chapter 3.) Reboot the computer (Control-Open Apple-Reset) or turn it off and on again to clear the message and bring up the correct DOS 3.3 welcome message.

SYMPTOM: The computer runs out of control: the standard keyboard commands, in the program you're using, won't get its attention.

DIAGNOSIS #1: The computer is stuck in the same spot ("hung up" or "in a loop") in a program that for some reason won't let it finish running. It's like a record which is stuck in the same groove because of a scratch. This can happen because of a stray electrical impulse or static, or if you've inadvertently assigned it an impossible task, or if there's a design fault in the program itself. The computer cannot take any further commands, ignoring the signals building up in the keyboard buffer.
REMEDY: To break through the loop, or interrupt the computer from going 'round in circles (figuratively) or from continuing to work on a very complex problem, you'll have to turn the power off and on again. Rebooting alone probably won't be enough. Wait ten seconds or more before turning the system on again to make sure all the circuits are cleared.

DIAGNOSIS #2: It's possible that the computer is trying to send a message to a peripheral device such as a printer. If the printer isn't on, the computer will simply keep sending a message anyway; it expects and needs a reply message from

the printer. If you were trying to print when your computer became hung up, but your printer was off or in the "not ready" mode, try switching it to the "ready" or "select" mode.
REMEDY: Don't do anything else to your computer. Wait a few seconds; then if nothing happens, go ahead and reboot.

SYMPTOM: You cannot see all of the display—some of the image is off to the side, or it jumps or flickers up and down.

DIAGNOSIS #1: Sometimes a new monitor will flicker for a while as it warms up.
REMEDY: Let the monitor continue to flicker for up to half an hour. If it doesn't stop flickering within this time, take it to your dealer for adjustment. If the flickering stops within the half hour, carry on working. If this initial flickering continues to reoccur after a reasonable break-in time (a week or so, if you use the computer every day), have the monitor adjusted or replaced.

DIAGNOSIS #2: The vertical hold needs adjustment. This means taking the plastic case off of your monitor and using a thin plastic screwdriver-like tool (the kind used for TV sets) to adjust the right dial on the circuit board. Have your service technician do it, or, if the directions are given in your owner's manual and you have experience repairing equipment, try it yourself.

SYMPTOM: Intermittent error messages appear on your screen, indicating error codes in RAM.

DIAGNOSIS #1: An interface card or cable is faulty.
REMEDY: Remove, clean, and replace the interface cards and check cable connections.

DIAGNOSIS #2: A chip on an interface card is faulty.
REMEDY: Remove a card and try a program which will run without this particular card. If no errors occur, you may have narrowed the problem to the card. Return it to your dealer for replacement.

PROBLEMS: Keyboard

SYMPTOM: Keyboard gives no response or incorrect letters or symbols appear on screen.

DIAGNOSIS: You may have hit two keys simultaneously, sending a third and erroneous signal to the CPU.
REMEDY: Back up and enter the correct characters again.

SYMPTOM: A character is repeating across the screen.

DIAGNOSIS #1: There may be a loose connection in the key.
REMEDY: The faulty key will have to be replaced by your dealer or a technician.

DIAGNOSIS #2: A key is sticking.
REMEDY: Try lightly hitting the key. If you continue to have problems and your unit is new, try to exchange the unit or have it repaired under warranty.

But once a key has gotten stuck, chances are it will happen again. So get your keyboard examined and, if necessary, cleaned by a competent technician. Do not try to remove keys or clean the keyboard yourself; you are more likely to damage the connectors and circuits.

SYMPTOM: The computer does not respond to anything typed into the keyboard.

DIAGNOSIS #1: The keyboard buffer (an area of memory that temporarily stores the input from the keyboard) is full, and cannot accept any further input. This means the program in the computer memory is busy doing something and is not ready for more input, either because it is engaged in a lengthy computation or because the program is hung up and is repeating a process from which it cannot escape—the "endless loop" syndrome.
REMEDY: Try the Control-Open Apple-Reset reboot procedure first. If that doesn't work, you will have to turn the unit off and on again.

DIAGNOSIS #2: You inadvertently hit a combination of keys which has sent the computer on a wild goose chase looking for a nonexistent peripheral in an unused expansion slot.
REMEDY: To be absolutely on the safe side, turn off the power and turn it back on again.

SYMPTOM: The computer has been working fine. Suddenly your keyboard gives you no response. The screen may fill up with garbage or remain empty.

DIAGNOSIS #1: If the weather or just the room is warm, the computer could be overheating.
REMEDY: Turn the computer off for a while, making sure your system has sufficient ventilation, and let it cool down for 10 or 15 minutes. Then try again.

DIAGNOSIS #2: If you are using a data base program, the screen is blank, and the drives are occasionally working, the program could be just processing, performing a calculation as instructed. Data base programs need time to sort and rewrite their data.
REMEDY: If the problem doesn't stop after a half hour or so and you had fewer than two hundred records, you have a problem. Talk to someone familiar with the standard operation of your program. If you had more than two hundred records and a complex sorting command, the program is probably just taking a while to sort, and you should leave it for a couple of hours. If you get no error or other message by then, reset the computer and try again. (If you reset while a sort is in progress or while the computer is online, you may lose data files.)

COMPUTER SCREEN CHECKLIST
The most common problems:

- Nothing on the screen
- Error message, number, or code on the screen
- Unbalanced or misaligned picture

- Indecipherable symbols on the screen
- Nothing appears when keyboard is typed
- More than one letter appears when a single key is typed
- Blurred image on screen
- Image suddenly disappears

The most common causes:

- Brightness knob turned down
- On-off switch turned off
- Loose, misplaced, or missing cable
- Wrong system master disk or disk without DOS
- Disk put in at wrong time
- Static electricity
- Uninstalled program
- Disk drive door not closed

POWER SUPPLY CHECKLIST

1. Is the power cord plugged into the wall outlet and connected properly to the system unit?
2. Are the connecting cables plugged in?
3. If you're plugged into a line filter (and you should be), has it blown a fuse, or has your house circuit breaker switched? (Check this by plugging in a lamp to see if it goes on.)
4. Check screen brightness knob.
5. If all else fails, your authorized service technician has a diagnostic card which inserts in any slot and will go through a diagnostic check of your CPU, ROM, RAM, keyboard, video screen, character set, and speaker.

3

DISKS AND DISK DRIVES

Without its special square envelope, a floppy disk looks like a small, flexible phonograph record. Like a 45 rpm record, the disk has a large hole in the center, but this disk spins much faster—close to 360 revolutions per minute. The lint-free fiber coating inside the disk's square envelope is lubricated to protect the surface of the disk.

The surface of the disk is made of mylar and coated with a layer of millions of iron oxide crystals one one-thousandth inch thick. These crystals hold positive or negative electrical charges.

Unlike the way a needle travels in a groove to "read" a record, a disk drive head lightly touches the surface of the disk. The head transmits or "writes" electrical impulses onto the disk. As a tape recorder head plays a song from a cassette tape, the disk drive head "plays" or "reads" the series of stored impulses from the disk into the computer's main memory. Each "bit" is stored as an electrical charge. If there is a storage capacity of 140K on an Apple disk, there are over one million discrete (and readable) electrical charges on that disk. Now you can begin to appreciate why disk drives cost so much. They have to be high-precision instruments.

Although the way a disk drive head records or "writes" onto and "reads" from a disk is similar to the way a tape recorder works, the process is much more complex.

There are two small motors in each disk drive: one spins the disk, the other moves the drive head back and forth across the open area of the disk jacket to specific locations, in response to your commands to get or store files.

New floppy disks for your Apple IIe are blank until you *initialize* them. The initializing or *formatting* process lays down concentric circles or *tracks* of electrical charges on the disk—along which file information will be stored. These tracks are then divided up into small pie slice-like areas called *sectors*. Each of these sectors is numbered. Files are then located on the disk by track and sector addresses; for example, track 19, sector 3.

Your disk directory is written on track 17, in the middle of the disk, so that the drive head doesn't have to travel very far to reach the directory. This saves time and saves on disk drive wear and tear. When you turn on your IIe, the disk drive head automatically searches on track "zero" for a *boot* or startup program: that's how you get your DOS 3.3 or ProDOS message on the screen without activating a program yourself.

The computer uses the information in the directory to direct the movement of the disk drive head to specific files. Each file name in the directory is linked to information about the track and sector location of that file, so that the computer knows where to go to find the file. Unlike your tape or video recorder which has to rely on you, the human computer, to find the correct starting place on a tape, your computer will find the right file for you.

New users often assume that the disk initialization program (INIT) copies the contents from one disk to another. That isn't what happens—although you can use the COPYA command to copy the entire contents of one disk to another.

The purpose of initialization is to prepare a new, blank disk for use with your disk drive. Your INIT program writes the tracks onto the disk and copies your DOS system information. Then it writes whatever BASIC program was in your Apple's memory (it could well be the one from the DOS disk you used to give the INIT command) onto the new disk as a "greeting" program that will begin running automatically every time you load that particular disk into your computer.

Disk manufacturers don't format disks for you in advance because disks are fragile and the formatting pattern could be damaged or erased during shipping, and because they don't know which of the dozens of computers on the market you might be using. Disks formatted on another computer—such as the IBM PC or the Commodore 64—will not work if you put them in your Apple disk drive.

Disks must not only be formatted for use with a particular computer, but also for a particular disk operating system. You initialize or format disks for use with your Apple IIe with either the DOS 3.3 INIT, or the ProDOS "Format a Volume" command, depending on which of these operating systems you are using. If you are making a backup copy of an entire disk (rather than preparing a new data disk) you do not have to format separately, since both DOS and ProDOS format disks as they copy them. If you need disks to use with a CP/M program (if you're using a CP/M card in your Apple), you must use the CP/M Format utility program. Some commercially available programs run with Pascal or the UCSD p-system. These will provide you with a special utility program for initializing disks. You can, if you want, erase a disk by reinitializing or reformatting it. You can also reuse an old disk prepared with one operating system by reinitializing it for use with another operating system.

In order to start using your Apple IIe, you must put a disk containing a copy of the operating system (a "bootable" disk) in the disk drive. Otherwise, when you turn the computer on it will just keep looking for the operating system disk in the empty drive. If you want to use Applesoft BASIC from the computer rather than a disk-based program, you can get a BASIC prompt by hitting the Control and Reset keys. Nothing else will work. If you hit the Control-Open Apple-Reset key combination, as you do to clear the Apple's memory, and reboot the system, the Apple will go back to checking the empty drive.

If you want to read a disk initialized with an earlier version of DOS, you can do so by using the DOS 3.3 program called "CONVERT13" from your System Master disk. This program simply transfers the contents from the old 13-sector disk to the new 16-sector disk. Then you can reformat and reuse the old disk with your new DOS, if you want.

As an alternative, you can use a 13-sector disk from an earlier version of DOS (3.2.1 or earlier) with your DOS 3.3 16-sector disk, by using your DOS BASICS disk. The BASICS program will prompt you to insert your old disk so it can be read. But it's better to convert your old programs to a new version DOS disk so that you don't have to go through this process every time you want to use the disk.

The newest disk operating system, ProDOS, is quite different from DOS 3.3. It formats a disk to 35 tracks containing 8 blocks each. One block is equal in storage size to 2 sectors of 256 bytes each. Using the ProDOS "/CONVERT" program you can transfer your data from other formats into a ProDOS format. While DOS 3.3 can't use ProDOS-based program files, the ProDOS utility programs will allow you to check your DOS 3.3 files for bad blocks or to compare two DOS 3.3-formatted disks.

DISK DRIVE CARE

Technicians are unanimous in saying that your disk drives will need more servicing and repair than all the rest of your computer system combined. They are the only "moving parts" of your machine, not counting your printer. By cleaning the drive heads regularly and taking the drives in for regular maintenance to check and adjust the alignment and timing, you should reduce the need for serious repairs; you will also save yourself from losing material at a crucial time due to dirty heads or misaligned drives.

The most important part of disk drive care is preventive maintenance: regular cleaning and protection from external dirt. The read/write heads become dirty the same way your tape and videotape heads do. Normal oxidation build-up can cause you to lose or miss data when you retrieve a file from the disk. In dirty environments, where there is a lot of cigarette smoking, dust, animal hair, or other interior air pollution, you will have to clean your drive heads more often than in a clean-air environment. Protect your disk drives from dust and film by using a nonstatic dust cover. Make sure the drives are covered at all times when you are not using your Apple. (Read Chapter 1 for more information on environmental precautions.)

Just how frequently you should clean your heads depends on how often you use your computer and on the cleanliness of your computer's environment. Don't do it every day, or even every week, unless you are in a very dirty environment. Cleaning too often will wear down the head surfaces. Once every two to four weeks in a dirty environment, and once every two or three months in a clean environment should be adequate.

Cleaning disk heads is similar to cleaning the heads of your sound- or videotape recorder. Some users even use the same materials, like cotton-tipped sticks and alcohol. But the disk drive heads are more difficult to reach than most tape heads, so most people use special disk drive cleaning kits. These contain a fabric disk enclosed in the same type of jacket as a regular disk. Add a few drops of cleaning fluid onto the fabric disk, then insert it into the spinning drive. Keep it in the drive for only a brief time, just long enough for the head to touch the fabric surface of the cleaning disk. The directions usually call for you to first reboot, using a System disk in the drive you want to clean. Then, when you have a menu or greeting, switch to the cleaning disk and give a "CATALOG" command. Because the head is looking for a directory on the cleaning disk, and that disk has no directory, the Apple will display an error message. By then the cleaning will be completed, and you can remove the cleaning disk. Wait a few seconds for the cleaning fluid to evaporate before using the drive again. Clean your second and any additional drives the same way: Insert the system disk in drive 1, insert the cleaning disk in drive 2, and type "CATALOG D2." Watch to make sure there is activity in drive 2, indicating the head is looking for the directory. The computer should again give you an error message, and you will have cleaned both of your disk drives. Be sure to remove the cleaning disk promptly.

You can help prevent the disasters that can result from misaligned disk drives by having the drives serviced every six months (more frequently with more use). If you have two or more drives done together, your service technician can make sure they are running as closely together as possible. Also, doing two at once or setting up a regular maintenance timetable will probably enable you to get a fee discount.

If you ignore your disk drives or rely solely on cleaning, you may be sorry. Cleaning alone is not sufficient for disk drive health. Software analysis programs on the market now are not reliable enough for measuring all the drive capabilities. If one drive gets badly out of whack, you may not be able to read the disks recorded on it with other, more correctly aligned disk drives. If you have a misaligned drive and you have it repaired, you may not be able to read your recorded material on the newly repaired drive, or any other; if there's a chance you have recorded data on such a drive, transfer the material from the disk, using that drive, to another disk on a good drive *before* the misaligned drive is repaired.

Be aware that some disk drive brands are noisier than others—and their groaning and rattling sounds can sound like gremlins have moved into the drive. But an occasional rattling sound is natural. If everything on the screen looks fine, don't worry about the sounds. Your ear will soon get used to these "ordinary" sounds. You will soon become able to detect any unusual sounds.

Disk drives are designed to run either single- or double-sided disks. Apple disk drives are single-sided. Be sure you don't buy the wrong disks for your drives—the right ones are single sided, double density (or "SS/DD" for short), and are "soft sector," meaning the computer decides where the sector divisions are; they are not put on the disks before you format them. In an emergency, you can use double-sided disks in your Apple IIe drives, but you are wasting your money buying them; they cost more.

There is usually a small notch in the square envelope of a floppy disk which can be covered over to prevent the disk from being written on. If there is no notch in that spot, nothing can be recorded on that disk. Some wise software program manufacturers distribute their master software without a notch to prevent inexperienced owners from accidentally erasing their new, expensive programs. However, some master programs require that the drive write on them as part of their personalized copyright protection attempts. To protect a disk which you don't want to erase accidentally, use a small label or tab (usually provided with your box of disks) to cover the notch.

Some computer buffs use this notch system for another purpose. They cut a second notch on the side opposite the existing notch and turn their disks over so they can use the other side, thus doubling the capacity of their single-sided disks. This practice is risky and not recommended. The disk surface on the lower side may be made from the same material, but it is not tested for errors by the disk manufacturer. With the economical prices on disks these days, it is worth buying more disks and being safe.

There are a wide variety of prices for different brand names of floppy disks, ranging from a low of approximately $19.00 for single sided disks to a high of $40.00. You should be able to find a supplier who sells brand-name disks for a price somewhere in the middle range. You pay higher prices for brand-name disks because of their (assumed) higher quality. Some manufacturers guarantee their disks for five years or for life and offer mail-in warranties; others are less generous. Certain brands of disks do seem to have more errors than others. Your dealer should be willing to exchange defective disks. Still, proper care for the disks you choose is at least as important as the brand you choose.

Many disk envelopes show pictures of what *not* to do to your floppy disks. Pay attention! Your disks must be handled very carefully; they should not be scratched, sat on, overheated or overcooled, bent, dirtied, put near magnetized tools, touched on their exposed surfaces, handled roughly, thrown like a frisbee, written on with ballpoint pen, or exposed to dust or other atmospheric particulate matter such as powder, grease, vapor, pet hair, or feathers.

Floppy disks store information by recording magnetic forces. Unwanted magnetic forces (usually those outside the disk drives), can damage and destroy the information on your disks. It is easy to accidentally put disks in contact with things that are unexpectedly magnetized, like paper clips from a magnetic holder, scissors, a portable radio or a tape recorder with an electric motor that produces a magnetic field. If you use a bulk eraser for erasing cassette tapes, don't think about keeping it in the same room as your disks; that magnetic field can extend over ten feet.

Damaging floppy disks can be a much bigger problem than damaging a cassette tape or record. A computer can't jump over a scratch and keep on going the way a record-player needle can. Computers depend on every single bit of information in order to progress along the disk. If there is an unexpected interruption, from a scratch or piece of dust, the computer loses its place and doesn't know what to do. The same thing happens if there is a change in the magnetic pattern on the disk. It is as if you were on a cross country hike in unfamiliar territory and someone had ripped out the middle section of your map.

Some of the most alarming sounds which a computer can make come from the disks.

Some disks make more hissing sounds as they spin in their jackets than others do. If you are in any doubt about the health of a disk, carefully hold the disk by its envelope edges with one hand and brace a couple of fingers of the other hand inside the disk's center ring hole and see if the envelope turns easily. If it doesn't, the disk can't turn, and is therefore damaged and useless. Return it if it's new, or discard it if you've been using it for a while, or if you caused the damage. If it contains information you need, here's a last resort-only suggestion: Take the jacket off a discardable, used disk, do the same with the disk you need to salvage (trying not to touch anything but the innermost edges of the center ring), and switch envelopes. Make sure you don't lose track of the correct top and bottom sides when you put the disk in the new jacket!

Finally, keep a generally respectful and careful attitude when handling your disks; don't take anything for granted. Remember that problems can occur no matter how careful you are. Despite knowing all of this and being very careful of my own disks, I came back to my computer one day, and tried to look at the directory of the data disk containing the text for this book. The computer tried and tried to log onto the disk, without success. I tried every trick I knew—to no avail. Finally, I ran a disk diagnostic program, which told me that the disk's directory was damaged. I could have gone through the process of reconstructing the information on the disk using another disk utility. Instead, I took out an up-to-date backup copy of the disk (which I immediately backed up again) and began working. I suspect my potential disaster was the result of an electrical circuit problem which may have disturbed the directory area of the disk while it was in the disk drive. It went unnoticed when I saved my work, but after the disturbance, DOS couldn't see all of the directory. To prevent the problem from happening again I went out to get a good line filter for my computer's electrical outlet.

Although most disk damage comes from external sources such as magnetism, it is possible to cause your own disk errors just by running a program. For instance, hitting the wrong keys, or hitting two keys together might cause your Apple to interrupt the disk recording process.

Here's a short list of some things that commonly go wrong:

- If you inadvertently have the wrong disk in a disk drive, or worse, if you change disks during the running of a program, the Apple might over-write some important information on the wrong disk. However, it is more likely to give you an error message which will mean you may have lost any new information you had been hoping to save.

- If you designate the wrong disk drive to your program, (e.g., to store on drive 1 instead of drive 2), and the disk in drive 1 has a write-protect tab on it, you may lose the information you were trying to save.

- If you neglect to close the drive completely, the disk drive heads might try to read from or write to the wrong part of the disk; normally the Apple disk drive connection should sense that the drive isn't closed and simply not write.

- If you use the wrong command syntax, or language, such as "CATALOG" instead of "CATALOG D2," you may misunderstand what's on your directory and think something is wrong with your program.

- If you accidentally use an unintialized disk and then try to save your work, the computer will simply give you an error message and you may lose whatever you hadn't previously saved on another, good disk.

- If you inadvertently use a disk initialized for one type of operating system, such as CP/M, in drive 2 and you are using a program from a disk written for Apple DOS on drive 1, your computer will give you an error message or simply hang up, and you may lose any information you had hoped to save.

- If you have two or more disk drives you can specify the slot number of the second or even third pair, such as s2,d1, when you tell your Apple to run a program. However, if you specify a slot and/or disk drive number which isn't really there, your Apple will look anyway. If there's nothing there, it won't stop looking until you reset the entire computer. If there's another interface card in the slot, it is possible that something unpleasant could happen if you don't interrupt the search. So be careful when specifying a drive slot.

Never pull out disks while the drives are recording or just after you have instructed the computer to do something which requires the drives to work with the disk. You are likely to damage the disk and possibly the drive head.

For office use, you might want to make daily backups of important business data. Some experts suggest setting up a regular disk rotation plan, expecially for daily accounting or data base record-keeping. Others advise using a different disk for each working day of the week, recording a copy of Monday's work disk to use as Tuesday's work disk (the "Monday" disk serving as a backup), Tuesday's to Wednesday's, and so on, then take a backup of Friday's disk home for safekeeping until Monday. Another system uses three disks—one current working disk, one backup near your working place, and a second backup that is taken home in the evening.

PROBLEMS: Disks and disk drives

SYMPTOM: You can't find the file you need on the disk.

DIAGNOSIS #1: The disk is not initialized or it's initialized in another operating system, such as CP/M.
REMEDY: Put the questionable disk in drive 2 with a DOS disk in drive 1. Use FILEM or just CATALOG, D2 to analyze the disk in question.

DIAGNOSIS #2: You're using the wrong version of DOS (e.g., version 3.2 instead of 3.3).
REMEDY: Try an up-to-date DOS diskette in drive 1 to read the problem disk in drive 2.

DIAGNOSIS #3: The disk is a master program disk that is self-loading and copy-protected. Its directory cannot be read with DOS.

REMEDY: If it is a master program or game diskette and it is supposed to work on your Apple as is, follow the loading instructions that came with the product very carefully.

DIAGNOSIS #4: The file you're looking for is on another disk, but your program automatically looks only on the previously logged drive.
REMEDY: If this happens, try to access your file again. You may have to start from DOS rather than from the program you have been in. Copy it onto the disk in the drive that the program uses.

SYMPTOM: The disk drive has unusual grinding or chattering noises.

DIAGNOSIS: Your disk may have a bad sector.
REMEDY: If your disk has a bad sector, transfer all the files you can onto a new, intialized disk, then reinitialize the bad one. If you still encounter an error with that disk, throw it out (or, if new, return it to your dealer for credit).

SYMPTOM: Initialization fails. All you get are error messages while you are trying to format a disk.

DIAGNOSIS: If you run the initialization program more than twice and come up with an error each time, but other disks work, the disk that produced the error messages is probably defective. If other disks fail too, it's probably your drive that's faulty.
REMEDY: To find out where the problem lies, follow this procedure: After failing to initialize a given disk try initializing another disk. If the second disk intializes with no problem, your first disk is defective. If, however, the second disk fails too, try initializing the first disk in the drive you *didn't* use in your first attempts to initialize. If that works, your disk is fine but your first drive could be out of alignment. If the initialization still fails, try the second disk, and if it works, throw out the bad disk.

DISK CARE CHECKLIST

DO NOT:

- Bend the disk.
- Insert the disk the wrong way in its pocket or otherwise handle it roughly.
- Touch the surface of the disk (that is, touch the disk through the open part of the disk jacket).
- Put the disk near a heat source, or leave it in a hot car.
- Put the disk near any potential source of magnetism, such as electric motors (including printer motors), paper clips, scissors, screw drivers, stereo speakers, tape recorders, or bulk erasers.
- Write on the disk label with pencil or ballpoint. Use only felt tip pens.
- Allow the disk near a source of moisture.
- Stack anything on top of the disk.

DO:

- Store the disk upright in a closed container.
- Clean the disk drive heads regularly, according to your environment and frequency of use.
- Have the drives professionally checked every six months if you use your Apple every day.

PROBLEM CHECKLIST:

- Is the disk initialized correctly?
- Is the disk initialized to the correct operating system?
- Is the write-protect tab off?
- Is the drive door shut?
- Did you specify which drive you wanted to use?
- Is there room left on the disk? are you sure?
- Did you insert the disk correctly in the drive?
- Is your disk correctly labelled (with a felt tip pen)?
- Did you run the disk diagnostic test?
- If you have been using your computer a lot, have you cleaned the disk drive heads lately?

4

PRINTERS AND CABLES

THE CHRONIC PRINTER CASE

Dr. Campbell is a successful clinical psychologist, whose specialty is doing evaluations for insurance companies and health agencies. Because she often has to write long reports, word processing makes a lot of sense for her. She bought her computer and a daisy wheel printer and proceeded to have her clerical help enter her dictated reports. Dr. Campbell is, however, impatient and demanding with both herself and others and has a high staff turnover. Because she has neither the time nor the patience to teach her new staff thoroughly, she only has them enter the reports, not print them out. She does the printing now, or tries to. As often as not, she is unsuccessful and blames the equipment. She has had to make rush trips to her dealer to print out a file which failed to print in her office; repair people have made numerous trips to her office to try to find out what's wrong with her equipment. When she has come into the store to print out files because of "equipment failure" in her office, she has handled her disks roughly, snatching them from disk drives even after printing has started, and turning the printer on only after she's told the computer to print. As a result, her disks often give her error messages. The machine repair people can see what's wrong, but there's not too much they can do about it. It's not as easy to fix as a hardware problem.

WHAT YOU SHOULD KNOW ABOUT YOUR PRINTER

Not every printer will work with your Apple. Incompatible printers are one of the nightmares of the computer age. Many of the latest models will work with the Apple, but some older ones will not work.

If you are offered an older printer as a gift (or at a low price), *do* "look your gift horse in the mouth." Make sure it will work with your Apple before accepting it. Otherwise, you might end up with a very expensive paper weight. Either check with your dealer to see if the printer is compatible with the Apple, or try to contact the company who makes the printer. Some older models of well-known, reputable brands (such as some model numbers of the *NEC Spinwriter*) were made to work with larger minicomputers and cannot be adapted to work with the Apple or other microcomputers.

Whatever printer you decide to get, have its compatibility with the Apple IIe demonstrated in the store, using the same interface card you have or are purchasing. If you have any doubts about connecting everything, have a specialist from the store get the whole system working for you in your office or home. This step is worth whatever extra money may be involved.

In the rapidly changing microcomputer market, printer manufacturers cannot know what computer you have chosen. But they do provide some technical information to help you or your technician successfully hook up your computer to the printer.

There are conventional terms for the signals sent between the computer's CPU and any external device. Your printer's manual will usually specify how it needs to receive signals from the computer's printer interface card and port, usually listing which pins in the connecting cable send and receive particular "data," "ready," and "busy" signals. The way your software program is designed to communicate with printers must also be considered. Software packages, of course, are accompanied by yet another set of instructions.

If you have a specific requirement for what you want your prospective printer to do—for instance, if you need to use raised numbers for footnotes ("superscripts" in word processing parlance)—make sure to tell your dealer and see that feature work on the printer you're planning to buy. Otherwise, it may cost you hours of programming time later to get an exact fit. (If you are buying through the mail, make sure to find out if the dealer knows which printers are known to be compatible with the Apple IIe interface cards, and which can work with the software you'll be using.)

PARALLEL VS. SERIAL

Other than liking the look of the typeface and the price, the first thing you must know about your chosen printer is whether it has a parallel or serial interface. A printer has to be one or the other; many popular models are manufactured in both types. In general, parallel interface printers are less troublesome to control and are cheaper.

The terms "parallel" and "serial" refer to the way the printer talks to the computer. Very simply put, a serial printer gets information from your computer one bit at a time, while a parallel printer receives a set number of bits at a time.

If you have a parallel printer, it will be connected to your Apple with either a round or a wide flat ribbon made up of 36 wires. If you have a serial printer, the cable connecting it to your Apple may look like a cablevision cable, with a small wide plug with between 9 and 25 pins at the printer end.

During printing, your Apple sends a series of commands to the printer and waits for a response. When it gets a "ready" signal, it sends more information. This process can either go on simultaneously, as in parallel printing, in which the words or characters are sent on some of the wires or "pins" while the "ready" signals are sent over adjoining wires; or it can go on sequentially, as in serial printing, in which the "ready" signals are sent at the beginning and end of the group of words or characters being printed.

THE PRINTER SELF-TEST

Most printers have a handy self-test feature (directions on how to make it work can be found in the manual) which enables it to check its own health, even without being connected to your Apple. Not only is it useful for diagnostic information, but it also allows you to compare type styles on different daisy wheels, or to see where a given symbol is on a new daisy wheel in relation to the old one.

If your printer conducts the self-test correctly, you know it is working fine. The chances are that any problems you're encountering are ones of communication or of language: Either the cable and connections are wrong or the software you are using is telling your Apple to send the information to the wrong destination or in the wrong way.

Running the self-test: Make sure that you understand how to do the self-test. Have it demonstrated by your dealer, or look through your manual and follow the instructions given there. The self-test usually involves pushing one or two of the control buttons on the front of the printer in sequence or while turning on the power. You should have wide paper in the printer, because the test involves printing the alphabet and a set sequence of symbols. When the machine has printed two or three lines or enough for you to see that it is printing consistently and correctly, turn off the power or the test switch.

To stop a printer during the printing process, try these procedures:

If the printer isn't tearing up the paper, but you've just seen a mistake you want to correct in your printout, use the software to interrupt the program running in the computer. Use a stop-print command, if there is one. Once that stop-print command is engaged, quickly turn off the printer power, wait two or three seconds for the power to completely leave the circuits, then turn it on again. Turning it off will get rid of the material in the printer memory.

If the printer is tearing up paper or doing something else disastrous, you should stop it first. If it looks like you might be able to solve the problem quickly and you don't want to interrupt the computer program, simply hit the "print on/off" or "select" button on the printer (NOT the power switch). This will freeze the printer in its tracks, sending a "hold" signal to the computer so no further material will be sent to the printer. Straighten out the paper and hit the "print on/off" button again.

If you turn the printer power off while the computer is still sending information to the printer, your computer program will probably hang up—and you will be unable to do anything with it. That's because your Apple will be waiting in vain for a "ready" signal from the printer in response to the "ready?" signals it has been sending. It cannot proceed with anything else until that "ready" has been received.

PROBLEMS: Printers and Cables

SYMPTOM: The self-test does not work.

DIAGNOSIS #1: When a printer is newly unpacked from its box, it may still have hidden packing material inside, blocking movement of the print head.
REMEDY: Look carefully around the print head for plastic bars or foam braces and remove them. Look in the packing box for diagrams of where the packing material is.

DIAGNOSIS #2: "Paper empty" alarm is on. On many printers there are switches or sensors which stop the printer if there is no paper being fed through. On the *C. Itoh Starwriter*, for instance, there is a shiny chrome wire across the top which lies forward or back. If it is forward and there is no paper between it and the top of your printer, the end of it falls into a tiny hole, causing an instant halt to all printing and the appearance of a red alarm light on the front panel of the printer.
REMEDY: Use continuous feed paper or use a sheet feeder. (On the *C. Itoh Printmaster*, for example, simply fold the wire back so that the end is not in the hole. Until the wire is removed, the printer will be immobilized.)

DIAGNOSIS #3: The top of the printer is either off or loose. There is usually a switch or sensor which sends a signal when this occurs.

REMEDY: Make sure the top is on firmly. Even if it looks like it's on, it can be slightly loose, enough to set off the lid-off sensor. Double check by finding the sensor and making sure it's being turned off by the closed lid.

SYMPTOM: The print head moves and tries to print but fails.

DIAGNOSIS #1: Your daisy wheel isn't properly in place.
REMEDY: Be sure that the daisy wheel is pushed in firmly. If it is loose, it won't print properly and you might damage it.

DIAGNOSIS #2: Your ribbon is not in the correct position or it's loose.
REMEDY: Make sure your ribbon is firmly in place, and wind it forward a couple of turns to make sure all the parts are moving smoothly.

SYMPTOM: The printer does not print but the self-test works.

DIAGNOSIS #1: The malfunction is caused by loose connections.
REMEDY: Check the connections again. Cables can loosen or fall out while being moved. Make sure your printer cable is in the right part on your Apple and that the cable is fully plugged in at both ends. Sometimes you have to push very firmly to make contact.

DIAGNOSIS #2: Your cable is faulty.
REMEDY: You could try reversing the cable (if both ends are the same), but most probably it will have to be replaced.

DIAGNOSIS #3: Your on-line switch is off.
REMEDY: The "on-line" or "select/deselect" switch on the printer must be engaged for the printer to work. This switch comes in handy if you must suspend printing temporarily.

DIAGNOSIS #4: The computer's output is being sent to the wrong port.

REMEDY: Try printing something short while watching the screen very carefully. Let's say that after you have given your Apple program the command to print, it tells you that printing is under way; then the screen indicates that the computer has finished or perhaps that it is ready for more—but all the while nothing has happened, the printer has not budged. This probably means that your Apple and printer are not communicating with each other at all; that the software that directs input and output is sending information to the wrong output port—either the serial port or the screen.

DIAGNOSIS #5: If you use a serial interface for both a modem and a printer, you may have the controller switch on your interface card pointing the wrong way.
REMEDY: The triangular arrow on the serial interface card (also called a "jumper block") must be pointing to "printer" for using your printer, to "terminal" for using your modem. You can change it yourself if it's set wrong.

DIAGNOSIS #6: Your cable is not correctly configured for your Apple. The cables must be specifically made for the Apple and the printer you are using.
REMEDY: Check to make sure you received the right cable when you bought your printer. If it is a parallel interface cable and it fits the outlets on your Apple interface card and your printer correctly, chances are that the wiring is correct and your problem is elsewhere.

DIAGNOSIS #7: If using a serial printer, your baud rate and parity are not set correctly.
REMEDY: Check with your dealer to see whether those protocols have been set on the printer. If they haven't, see what your printer requires; the DIP switches on your interface card may have to be adjusted.

DIAGNOSIS #8: Although it appears that you have the correct serial cable, not all of the pins are connected correctly, so your printer is not receiving all of the information it needs to print. Serial cables are often built with only seven or eight of the set of pins fully connected, because many computers and printers need only that many wires to communicate

completely. However, nonstandard interfaces, such as the one on the *Daisywriter II* printer, have to be specially built by the manufacturer to conform to the exact specifications of your Apple's serial card output. This may require a special cable. If the information sent through the cable is erroneous, either because you are not using a standard serial card, because of a design change which was made in the early Apple IIe serial cards, or because of the "incomplete" cable problem described above, the printer won't be able to print.
REMEDY: Your printer salesperson or technician should take care of this. The cable may have to be replaced with one with the correct number of connector pins or otherwise altered, so that the signals sent and received by the computer exactly match the ones received and sent by the printer. This is not too difficult with a standard serial cable, which allows the communications channels to easily be tested using a "breakout box." However, with a nonstandard cable connection, such as the edge connector on the Daisywriter II, the manufacturer will have to make up a special cable, which someone (guess who!) will have to pay for.

SYMPTOM: The alarm signal on printer goes on.

DIAGNOSIS: Your ribbon has run out or you are out of paper, or your lid is off, or your cable is loose or faulty.
REMEDY: Turn printer off and do the following:
RIBBON: Check the ribbon first. It may look like there's still ribbon, but try winding it forward. Some printer heads have an infrared sensor which projects a beam to the ribbon. Usually the reflection of the beam is faint, but when it shines on the different-colored or reflective leader on the end of the ribbon, the reflection is much brighter and the printer sets off an alarm.
PAPER-OUT SENSOR: Checking this should be easy, but if you're using narrow paper or labels, or if you have the paper far enough from the left margin, the sensor may not detect paper. In that case you may have to move your labels closer to the left margin, or find a way to disable the sensor. (Refer to your manual.)
LOOSE LID: Remove or lift lid and replace firmly.
FAULTY CABLE: You can check this by unplugging the

cable at the printer end while the printer is off, and then trying the self-test. If the self-test works without the cable, but not when the cable is plugged in, replace the cable.

SYMPTOM: When you try to print, your screen promptly "freezes" and you are unable to move your cursor or use the keyboard to enter any command.

DIAGNOSIS #1: The computer is sending the information out, but it is not getting the required response from the printer, and the information flow is "backed up" all the way to the keyboard buffer in the Apple unit.
REMEDY: After you have made sure it isn't just your on-line/off-line button, try turning off the printer and turning it back on again. If that doesn't help, the only thing you can do is reset your computer.

DIAGNOSIS #2: The output is going to the wrong port, as under the symptom "The printer does not print but the self-test works" above.
REMEDY: You will have to reboot to get out of the program, using the Control-Open Apple-Reset combination, or turning the power off. With the printer off, check your interface slots and the connections between the computer and your printer. Then check that your software installation includes the correct printer interface slot number, and, if required, the correct printer description. Then make sure that all the power is turned on again, boot your program disk, and try again.

SYMPTOM: Printer prints too close to the bottom of the page.

DIAGNOSIS: You are printing on cut sheet paper with too much margin, and your printer ran out of space on the page before it was finished printing that page.
REMEDY: Position the paper so that printing begins closer to the top of the page.

COMMENT: Software programs usually count the number of lines printed so that you don't print off the end of the page. Some printers have "paper out" sensors that stop the printer when you run out of paper, but these sensors aren't used when you are feeding single sheets of paper. Because there are 66 lines on an 11-inch sheet of paper, some software prints 55 lines per page, leaving 11 lines for top and bottom white space. If you leave too much of this margin at the top of the page, the printer will still print out the full 55 lines, which may take you off the bottom of the sheet. Print several test sheets of paper to get the best positioning for the paper.

SYMPTOM: The printer prints double or overprints on the last few lines of the page.

DIAGNOSIS #1: The printer started printing too far down on the page. At the bottom of the page, the roller has run out of paper to grip and push through, so it is unable to push the paper up enough to print on a new line.
REMEDY: Put the paper in with less top margin.

DIAGNOSIS #2: The roller is loose and there's not enough friction to pull the paper through. Something is probably stuck in the paper feed area.
REMEDY: Look in the opening where the paper feeds behind the roller. Try feeding through a piece of paper toward the ends of the roller (this is where torn paper usually jams). Some daisy-wheel printer rollers are easy to remove. If yours is one of these, remove the roller and check for little lumps of leftover packing foam or crumpled paper.

SYMPTOM: Unwanted letters are being printed.

DIAGNOSIS #1: If this is a letter-quality printer, and the self-test produces unwanted letters, you could have a loose daisy wheel.
REMEDY: Check wheel and attach firmly.

DIAGNOSIS #2: If this is either a dot-matrix or a letter-quality printer and the self-test works properly, the problem could be caused by your software program.
REMEDY: Try printing something from a different set of disks, after resetting your computer and turning the printer

off and on again. If the different software makes the printer print correctly, you will have to find out what instructions to change in the problem software.

DIAGNOSIS #3: If the self-test works but any program produces unwanted printing, it could be a faulty chip on the printer interface card.
REMEDY: This is best handled by a technician. The easiest approach is to try another interface card which you are sure is working on another Apple. A technician can also test for a faulty ROM chip.

SYMPTOM: The daisy wheel prints out degree signs where there should be apostrophes.

DIAGNOSIS: Some daisy wheels have the apostrophe in a different place. You simply have to find out which key on the keyboard to hit in order to have the apostrophe print out.
REMEDY: Use the printer's self-test with your original daisy wheel, then again with your new daisy wheel. Compare the two printouts to see where the new wheel's characters are located in relation to the old one.

SYMPTOM: The words look crowded on the page.

DIAGNOSIS: Your pitch size is set incorrectly, or the "type size" switch is loose.
REMEDY: Check your printer's manual to see if and how you can adjust the pitch. In most cases you'll have to change the pitch size switch until you have the correct setting. This switch can come loose, or it may not have been set right the first time. If it's loose, resetting it helps to connect the right circuits. Turn the printer off before changing switches. Then turn it back on to clear the memory so that it can accept new settings. (Gently wiggling the wires sometimes works!)

SYMPTOM: The printer doesn't stop printing at the bottom of the page. Words print off the bottom of the page or over the page perforation.

DIAGNOSIS: You have set your line spacing differently on the printer than on the software you are running.

REMEDY: Because the software usually keeps track of the page length, you must adjust the line spacing there and leave the printer setting on single spacing. If it is not possible to adjust the line spacing in the software, or if you have a printer which isn't capable of or doesn't respond to software commands, trick it by setting the page length shorter (in the software). For instance if your printer can print only double-spaced (probably because it is performing an extra line feed), tell your software program that you have 33-line pages instead of the standard 66 lines. (You should also check, or have your dealer check, that your printer's DIP switch pin settings are correct.)

SYMPTOM: Tops or bottoms of letters are being cut off across the page.

DIAGNOSIS #1: First, make sure your daisy wheel is on firmly. If it is, you may have the wrong model of ribbon for your printer, especially if it isn't the brand name recommended by the manufacturer. It may look the same but actually be slightly narrower.
REMEDY: Get the brand-name ribbon for your printer. Cheaper substitutes don't always work as well. It's also possible that your ribbon is jumping around and the daisy wheel is striking in the correct place but the ribbon isn't threaded between the daisy wheel and the paper. Some cheaper imitations of brand-name ribbons can cause this problem; some printers are not designed for ribbons other than the one that comes as original equipment. For instance, the *C. Itoh Printmaster* (55 cps model) has trouble with mylar ribbons, which tend to skip over the daisy wheel. Cloth ribbons work much better.

DIAGNOSIS #2: If you're using the Apple Daisy-Wheel Printer, it may need a technical adjustment to the platen height or the ribbon holder.
REMEDY: You can experiment to see if the problem is caused by the type of paper you're using; also see if you can lift the platen slightly by hand, to ensure that the letters are striking squarely against it. If that doesn't work, these adjustments will probably have to be made by your technician.

SYMPTOM: The printer prints unevenly—some letters are light, some are dark, some letters don't show up at all.

DIAGNOSIS: You have either an old ribbon or a dirty daisy wheel.
REMEDY: First, examine the ribbon and change it if you see worn spots. Second, look at the daisy wheel. You should be able to see if the middle of the small "o" is clogged with ink and ribbon particles. Try the printer with another daisy wheel to see if the same unevenness appears. If it doesn't, clean the old wheel, put it back in place, and try again. If the same unevenness *still* occurs, the daisy wheel is probably worn out and should be replaced.

SYMPTOM: Letters are disappearing, and the printing is faint.

DIAGNOSIS: There's most likely a problem with your ribbon. If the ribbon's cloth, it needs replacing. If it's mylar, and some letters are disappearing, the ribbon advance could be faulty and may need to be replaced.
REMEDY: First, try winding the ribbon ahead and turn on the printer self-test. If it prints badly, change ribbons and do the self-test again. If the printing is still bad, and you've used a new ribbon, then the ribbon advance in the print head is faulty and may need to be replaced. (This is the part that usually breaks down on a printer.)

SYMPTOM: Only half of a letter (top or bottom) is printing.

DIAGNOSIS: If this happens to all your letters, your print head has become misaligned so it's not striking the roller straight on.
REMEDY: This is a minor adjustment that should be made by a printer repair technician.

SYMPTOM: Printer prints only 3's (for instance).

DIAGNOSIS: Your DIP (dual inline package) switches are set wrong, so the proper message isn't getting from the computer to the printer's daisy wheel. Some DIP switches have different settings for different alphabets. Check with your dealer for the correct switch settings. Remember to always turn the power off on your printer when you are resetting the DIP switches. Otherwise the change won't work and you might damage a circuit. Also, as noted before, make sure to write down the original settings before you begin.

SYMPTOM: Printer prints @ ("at" signs).

DIAGNOSIS: On Brother HR-1 (serial interface) printers, the repetition of "@" symbols represents a wrong parity setting.
REMEDY: This is another example of an incorrect DIP switch setting. Check your manual for what DIP switch combinations will produce even, odd, or no parity. Then reset the switches, following the precautions mentioned above. "No parity" is the usual setting.

SYMPTOM: Paper creeps to the right after a few pages of printing.

DIAGNOSIS: This often happens with continuous feed paper when you don't have a tractor or pin feed on your printer. The left-to-right movement of the print head can gradually push the paper over. With bidirectional printing, this happens less often.
REMEDY: The paper should be lined up evenly going in and coming out of the printer. Having your printer on a small stand helps the free flow of paper. If you consistently print out more than ten pages at a time and don't want to be watching the printer all the time, consider getting a built-in tractor feed.

SYMPTOM: An uneven spread of letters is occurring across the page.

DIAGNOSIS #1: This can be caused by uneven paper.
REMEDY: If you are printing something with uneven thickness across the page, such as labels, try loosening the paper feed to a 2- or 3-carbon thickness.

DIAGNOSIS #2: If you were using regular paper when this symptom appeared, there's probably a loose belt in the printer's print-head drive.
REMEDY: Your technician will need to tighten the belt.

SYMPTOM: Printing gets lighter or more uneven on only one side of the page.

DIAGNOSIS: The mounting of your platen could be uneven, further away from the printhead or hammer on one side than on the other.
REMEDY: See if you can temporarily adjust the lighter side with the platen knobs to see if printing improves; you probably will still need to make a trip to a technician for a permanent adjustment of the platen.

SYMPTOM: The printer jumps down to the next line (in a spreadsheet or word processing program, for instance) so that some of the first line is continued on the second.

DIAGNOSIS: Your software thinks you have a wide-column printer with 132 characters across and your printer is less (80 or 100 characters).
REMEDY: Find out the right command to tell the printer to compress the print to 15 characters per inch, or compressed print, so all of your line, as shown on the screen, will be printed out the same way on the printer. This if often done by sending a code in BASIC to the printer before using the program; sometimes it requires a DIP switch setting in the printer. It is also possible to tell your program (for instance, *VisiCalc*) what width of printer you are using. In this case, the printer won't compress the print. Instead, it will print the second half of the sheet (since there will be more of the shorter lines) on the following page.

SYMPTOM: Margin fluctuates, with blocks of text printing correctly and other blocks out of place.

DIAGNOSIS: Power and signal to printer have been interrupted (if you have turned the printer off and on, for example).

REMEDY: Once the printer has started printing, don't interrupt it. If you have to adjust the paper but don't want to stop printing, just use the select/deselect button. If you want to stop the whole process and start again, first interrupt the program running on your Apple (or even reset), turn off your printer to clear its memory, and then set up everything the way you want it and start again.

WIRES AND CABLES

When something goes wrong, you've tried everything you can think of, and nothing seems to work, your suspicions should be drawn toward your cable connections.

If you are having an intermittent printer problem with a serial interface, examine the cable for bent pins. Any rough handling can affect the connection. *Never* pull on the wires or cables themselves; *always* pull on the end connector.

A good set of assumptions is that cables and wires *always* come loose; that they *always* break; and that they don't like computer users.

So, if something unpleasant and unexplained happens to you, you should first suspect "our friends" the wires and cables.

PROBLEM CHECKLIST

- Have you run the printer self-test? Does it work?
- Is your select or on-line switch on?
- Have you cleared your printer's buffer/memory, either by using a "clear" switch, if your printer has one, or by turning the printer off and on again following any change to the DIP switches or DOS disks?
- Did you clear the Apple's print spooler (if you have one) before attempting to start printing again?
- Is the cable between your Apple and your printer plugged in correctly and securely?
- Is the cable broken or frayed?
- Is the printer lid closed firmly?
- Is the "out of paper" switch disengaged?

- If the printer is new, has all packing or bracing material been removed?
- Is the daisy wheel firmly in place?
- Are you out of ribbon? (The original ribbon in some printers is shorter than standard.)
- Do you have the correct ribbon for your model?
- Are the DIP switches in your printer set correctly?
- Is your printer's paper roller free of obstructions?

5

MODEMS AND COMMUNICATION

"Modem" stands for "modulator/demodulator." A modem is a small peripheral device which translates "blips" of electricity that computers use to communicate into sound tones (like the touch-tones on your telephone set) and sends them over a telephone line or other telecommunications cable. Another modem "listens" to these sound tones and retranslates them into electrical impulses at the receiving end of the telephone hookup. The computers don't have to be the same kind; big mainframe computers in New York City can talk to your little Apple in San Diego, which in turn can talk to a bulletin board service across town.

One end of the modem attaches (with a serial cable) to your Apple's serial communications interface card (such as the Super Serial interface); the other end of the modem attaches to your telephone line. Some modems are built right onto a communications interface card, so that the whole unit fits inside the Apple system unit, and you can attach your modular telephone wire directly to the interface card when you want to use the modem.

The data is sent serially (through a "serial interface"), which means that a series of computer tones are sent one after the other. The pattern of high and low tones (or "ons" and "offs") that modems send translate into the alphabet and other standard typewriter symbols. These symbols have been standardized into a pattern called ASCII (pronounced "as-key"), for American Standard Code for Information Interchange. While there are several different ways a modem can interpret the stream of incoming tones, or "bits," most data transmission between microcomputers using modems follows the same pattern. A one-bit (sometimes two-bit) "attention" signal is given, followed by a "high" or "low" bit, the eight-bit series of bits making up the letter (or "byte"), and then an end bit which signals the end of the transmission of that single character. The computer and the communications software used to control the modem are set to certain *protocols* that define variations of the above. These are agreed upon in advance; everything has to match at both ends of the communication in order for a successful transmission to take place.

All of this "bit" work is done at a very high speed, measured in terms of ***baud rate.*** The word is derived from the name of a French scientist, J.M.E. Baudot (1843–1905), who did pioneering work in telegraphy. Baud stands for bits per second. To translate these speeds into human terms, 300 baud would be about 5 words per second. Standard telephone transmission rates for the modems used with Apples and other microcomputers are 300 and 1200 baud.

Most popular modems (such as the Novation J-Cat or the Signalman Mark VII) can work at only one speed—usually 300 or 1200 baud—but a few (such as the Hayes Smartmodem and the Signalman Mark XII) can be operated at both speeds.

There are two basic kinds of modems: acoustic and direct-connect. Most people prefer the direct-connect kind because the tone signals go straight into the phone lines. Having the modem right on an interface card lessens the possibility of "noise pollution." This may or not be feasible, depending on your phone equipment. With the acoustic modem, or acoustic coupler, your telephone's headset is placed into two cups connected to the modem, one for the mouthpiece and one for the earpiece. The standard telephone headset picks up or transmits information from the modem acoustically (that is, there is a speaker in one cup and a microphone in the other).

If you have a single or multi-line phone that isn't plugged into a modular jack, or if you're using your modem and computer while traveling, the acoustic coupler is your only choice. But the technology of modems is constantly improving and perhaps these limitations will be overcome soon.

Using a modem to communicate over the telephone lines means you have to have relatively "quiet" telephone lines without too much static or other noisy interference. In many areas, telephone connections aren't very good. If you regularly have static on your telephone line, you may have trouble communicating through a modem. Also, if you have any of the telephone company's "call waiting" services on your line, you are likely to have your computer communications interrupted. That can be quite exasperating if you are paying high charges for access to a remote data base.

Most of your modem problems will occur when you first connect your modem and are installing your software program. Expect to have problems and to work through them methodically. Once you have your Apple talking to other computers, your problems should cease. Only when you change to a different baud rate, or decide to try a new "trick" of operation, or when you are experiencing bad telephone interference, should you encounter any further difficulties.

When you begin working with your modem for the first time, do some advance planning. Have an experienced friend come over to help, to give moral support, and to share the fun. Have a list of local bulletin board service (BBS) telephone numbers handy and be sure you know they're up and working when you will be trying to contact them. Even better, see if you can contact the SYSOP ("system operator") who runs the bulletin board service at a separate telephone number for advice during your session. (Users' groups can be very helpful as a source of eager bulletin board service operators.) If you have obtained a subscription to one of the large commercial data bases such as *CompuServe* or *The Source*, you will need not only your membership number but also your secret password in order to use the data base. Access time fees on these data bases are lower in the evening. Start your adventures in telecommunications by practicing with a local, free service before you attempt to use a commercial one. If you intend to use a commercial data base and a 1200 baud modem for business purposes, your subscription fees will be high, because you will be able to transfer-material from the data base four times as fast as with a 300 band modem, and you're paying for the service by the minute.

When you access a commercial data base, your Apple will, in essence, work as a "dumb terminal." You will be using the "brain power" of the mainframe computer holding the data base, so you will have to use *its* software commands. Although the beginning menus are usually helpful, there will be some commands you will need to know. When you begin, try to get a checklist of the most commonly used commands in the data base. These will help you change from one subject area to another smoothly, and exit from the system correctly. (Avoid being overbilled because you didn't "log off" correctly.)

If you do accidentally get cut off, and want to ensure that you're officially logged off, you can try to immediately reestablish the connection and then log off formally. If, for some reason, you can't do this, don't worry. The commercial data base computers do regular, periodic checks to make sure you're still logged on, so they will know that you were cut off. You probably won't be billed for more than 15 minutes of unused time.

Start by booting up your communications software. Communications programs often allow several options. You can simply send and receive files from another computer, or set the modem to automatically answer the phone and receive files if you wish. But to talk to a large data base, you must be in the "terminal mode." In this mode, you can converse with another person via your keyboard and screen, or use the services or resource of a remote computer, or transfer or "download" files from the remote computer to yours. When you are logging on to a service like *CompuServe* or *The Source*, you will switch from using your own terminal software commands to using their commands.

Once you have chosen the terminal mode option on your communications software, you are ready to start talking. Some software for the direct-connect modems enables you to dial a telephone number directly on your keyboard. Once you have done that (or have dialed the number manually on a voice/data-type modem and switched to the "data" mode), the computer at the other end will give a tone to which, if everything is working right, your modem/computer will respond. If you have a built-in modem, you won't hear any of this, of course.

The next thing you should see on your screen after the blinking cursor and your terminal mode sign-on message (if any), is a greeting message from the remote computer. This can be a moment of triumph or of despair. If there's no message after ten or fifteen seconds, the connection has not been successful. If you have a switchable voice/data modem, you will find that if you switch to "voice" you will hear only a dial tone. This means that the remote computer has hung up. You will experience the mortification of having a machine hang up on you!

You are in the majority if your first attempt at modem communications is unsuccessful. It takes a little while to get everything right. Keep trying, it's worth it. Check to see that your software and hardware are not at fault. If you have an auto-dial modem, check that the dialing function is working correctly with your communications software. Check all your connections; check your baud rate settings, and check your software's configuration to make sure it agrees with the remote computer's requirements. If you have an external modem with a serial cable, check to see that it's connected firmly to the serial interface. Call the technical assistance numbers of the bulletin board or data base service you're trying to use to find out their baud rates and protocols: half or full duplex, "receive/answer" or "send/originate" mode, and try again.

Once you are successful, you may transfer files to or from a bulletin board service. You will have to check these files carefully once they're stored on your disk. The "noise" on the telephone lines may cause the misinterpretation of a character and cause a strange character to be included in your files. A BASIC program file will, of course, not work until you have eliminated these characters from the file and have converted the program to Applesoft BASIC. Text files are the easiest to transfer; program files are difficult and may require specialized advice before you attempt it.

PROBLEMS: Modems and Communication

SYMPTOM: You can't get your computer to communicate through the modem.

DIAGNOSIS #1: Your baud rate may not be set to the right speed.

REMEDY: The baud rate is set through your communications software (check your manual) or, if there's no obvious way to do that, with the DIP switches on your serial interface card. And if there is a switch for the baud rate on your modem, make sure it's set correctly.

DIAGNOSIS #2: If you are using the Apple Super Serial Card, your jumper block may be set incorrectly.
REMEDY: The "jumper block" with the triangular arrow symbol may need to be set to "terminal" rather than "printer."

SYMPTOM: You can communicate with another computer or a BBS (bulletin board service) but are unsuccessful in transfering files.

DIAGNOSIS #1: You may not be using the correct protocols (e.g., parity, stop bits) for sending and receiving data (see above for explanation).
REMEDY: Check with another computer user to see what protocol settings that person is using.

DIAGNOSIS #2: The files are arriving in the computer memory but not being saved on disk.
REMEDY: The procedures for capturing incoming data in a buffer and saving it to disk are different for each communications program. Check your manual for the software for how to save the files you are receiving.

DIAGNOSIS #3: In CP/M user group data base procedures, files are sometimes named without the COM ending.
REMEDY: Check to see if this is the case with the files you are receiving. The files you've saved may need to be renamed.

SYMPTOM: You are getting double keystrokes on the screen when you type in a command.

DIAGNOSIS: You have your communications protocol set at full duplex, and one of the program protocols, the "echo" mode, is set "on." You're getting a double echo back to your computer; that is, you are getting an image or "echo" of what you're typing back from your own keyboard, as well as another

"echo" back from the receiving computer. One of them has to go.
REMEDY: Set your echo mode to "off" (this is typically a software command).

SYMPTOM: Your printer is missing words when you try to print out what's coming in over the modem.

DIAGNOSIS: Your printer is slower than the modem. It can't keep up with all the words coming through.
REMEDY: Capture the incoming material on disk, then print it out later using your wordprocessing program.

SYMPTOM: You have purchased an auto-dial modem but it will not dial the number.

DIAGNOSIS: Your communications software isn't set to take advantage of the auto-dialing feature. Sometimes you must install the communications software for use with the specific modem you're using. By "installing" the software you are, in effect, telling the program which type of modem you're using, so that the program can send the correct commands. In this case, the process involves writing a short program which tells the modem which command to use to dial your telephone automatically.
REMEDY #1: Your modem package should include instructions on how to carry out this installation. Reinstall your communications software to include the auto-dial feature.
REMEDY #2: Include an extra dialing command when prompted for a phone number.

PROBLEM CHECKLIST

- Are the serial card DIP switches set correctly?
- Are the cables attached securely and correctly?
- Is the modem's power on? Is the modem plugged in to a working electrical outlet?
- Are there bent or loose pins on any modem cable connectors?

- Is the baud rate set correctly?
- Is the modem's switch (if any) set in the right mode ("originate," "answer")?
- Are the protocols you have installed or set in the software the same as the hardware (serial card and modem) *and* the same as those being used by the computer at the other end of the communications link?
- If you are trying to record something onto a disk, did you prepare for your "buffer capture" in advance?
- If you are using a CP/M program, is your "captured" file named correctly?
- Is your phone line relatively quiet and not open to interruption by extension or "call waiting" tones?
- Is your RAM sufficient for both the communications program you are using and for any files you may wish to capture?

6

SOFTWARE SAFETY

If you prepare yourself well when you first start using your Apple by backing up both your master program disks and your data disks and by installing your software correctly, you will avoid many of the problems inherent in working with software programs.

Besides knowing how to format and copy diskettes, you should learn how to transfer the DOS system (which contains only the system programs and the "greeting" program, which enables you to see the directory and use some utility programs) onto new disks, and how to copy individual files from one disk to another.

The first thing to do when you begin working with your Apple is to copy your master systems disk and, from then on, use only the backup copy to format other disks and perform other utility functions.

Copying disks for the first time can be tricky. It is possible to accidentally format your system master disk—making it unusable—instead of a blank, if you tell your Apple to format the (System Master) disk in drive 1, instead of the (blank) disk in drive 2. If you forget to specify drive 2, the formatting program will format the disk in the default drive, which is drive 1. Your dealer should have supplied a write-protect tab to put over the recording notch on this master systems disk, which should prevent you from accidentally formatting and erasing it. *Do not* remove the write-protect tab on the systems disk.

If you are using a different operating system than Apple DOS (such as the UCSD p-System or CP/M), be sure to use that master disk to format your disks. Disks formatted with one operating system will not work with another operating system; i.e. you cannot use an empty disk formatted with DOS with a program designed for Pascal or CP/M. This rule holds true for all the formatting and copying you'll do.

Your next step should be to choose which programs you will be using the most, copy their master disks, and put the originals away in a safe place. Make sure you have enough empty disks on hand (two boxes, or 20 disks, is standard for three or more major programs) to copy all your master software and have disks left over for the data you will create.

Read the instructions for copying the particular software you are using carefully; these instructions may be different from those given for copying the DOS disk. For some reason, there are a lot of individual peculiarities in Apple IIe software. For instance, one sophisticated tax planning program has an automatic copying and loading program on it which is copy-protected, so that if you try to copy it in the usual way, it will self-destruct. This isn't as cumbersome as it may seem; the auto-load program works efficiently in everyday use. In cases like this, it is vital to follow the backup or copying directions in the software manual.

People often try to outguess the manuals after becoming exasperated with confusing or indecipherable instructions. Be patient; badly written user's manuals are one of the inconveniences of the world of computers. If you work your way through the manuals slowly, step by step, you will soon catch on to what they are trying to tell you.

Second-guessing the instructions is usually disastrous. Be sure you are following your manual's instructions correctly. Otherwise you are likely to omit a vital step, or get stuck with half a procedure done, frantically paging through the instructions trying to find out exactly how to complete the job. If you really can't understand the manual try the following procedure.

First, to be sure you can't accidentally erase anything, copy everything that can be copied and protect everything that can't. Put write-protect tabs over the notch on your master program disk, unless (as in the case of some copy-protected software) the manual tells you not to.

Then try making a copy of your master program disk. Make backups of all of your master disks, following the directions in the software manual for the program, and put the originals away in a safe place. If you aren't given instructions and the program works with DOS 3.3, you can use the COPYA program.

To be sure that everything transferred properly, use the FILEM program to check files and compare the entire disk, or CATALOG, D1 and CATALOG, D2 to compare the file names. The names should be the same on each disk.

Please remember that some software is not supposed to be copied. If your disk is protected by using faulty sector and track I.D.'s, you will get "data error" messages from your program, and you should abort the process.

Next, prepare enough blank diskettes for two sets of working diskettes. Many new owners postpone preparing extra blank disks. They just start working with the prepared backup copies of their word processing disk, for example, and don't get around to finding out how to prepare new disks until their first data disk is full. If you have ever run out of space on a disk and been forced to abandon a couple of hours of original work because you had no blank formatted disks, you will appreciate how important this step is.

When you have extra disks on hand and have copied your master disks and put them away, you are ready to proceed with preparing and installing the individual programs.

There are so many different options possible with powerful software and so many brands of printers and computers that it is often necessary to "install" software. A typical installation procedure involves answering questions from a menu about what kind of terminal you have, what kind of printer you have (or what kind yours imitates or "emulates"; where the output should go (for instance, it might be slot 1 or 2 for a serial printer), and what "handshaking" protocol, if any, is necessary (if you are using a serial output).

These seemingly self-evident questions are necessary because different screens, for instance, have different ways of telling the cursor where and how to move; how to clear the screen in preparation for new messages; and precisely where at the top of the screen the words should begin for a proper framing of the entire screen. If you will be printing out your work, it is necessary to tell the program what kind of printer you will be using; for instance, whether your printer has a wide or narrow carriage (either 80 or 132 columns); whether it's a dot-matrix or daisy-wheel printer, and what method your Apple will use to talk to your printer—parallel or serial (depending on the type of printer you use), and so forth.

There are several facts about your computer system you should try to identify before installing your software.

• A common question installation programs ask is what kind of terminal your computer emulates. Usually there will be an option for the Apple, even though it is not, technically speaking, a terminal.

Another thing to know in advance is which disk slot and drive your program files and data files normally will be on. In many cases your program files will be on drive 1 (D1), and your data files will be on drive 2 (D2). (If you have only one disk drive, you will load your program first, and it will prompt you to replace the program disk with a data disk.) Occasionally, you may find that a program needs a particular file to be on a different drive than usual. Keep alert for any little "Note" messages in your manual, saying that the file "READIT.DATA must be on D2 for this program to work"!!

Your program will want to know what kind of printer you have, or, if yours isn't on the installation list of options for printers, what printer yours "emulates" or imitates. If you don't know which model yours emulates, check with your dealer or with the printer manufacturer.

Most programs also need to know the width of your printer in columns. The narrow ones (like the *Imagewriter*, the *Epson RX* or *MX-80*; or the *Okidata Microline 92*) are 80 columns wide; the wide ones (like the *Epson MX-100*) are 132 columns wide.

Whether your printer has a serial or parallel interface is something you should already have found out from your dealer or by looking at the connection on the back of the printer: The outlet for the serial interface usually has a piece of plastic shaped like a flattened letter "D" with 25 holes; the parallel interface on the printer is a larger flattened letter "D" but has a big gaping hole or depression in the middle, and no smaller holes.

You can have a serial connection and use it both for a printer and for a modem; or you can have up to two serial interfaces (one for a modem, the other for a printer) plus a parallel interface, to run two printers plus a modem without disconnecting anything.

If you have an unusual printer, and you require special printing features such as specialized graphics or true proportional spacing, you will have to know more than the above and will probably need help in doing a custom installation. The software you're using needs to know which "escape sequences" (so called because the Esc key is hit before a second and possibly a third key in sequence) the printer needs to receive in order to perform fancy movements such as reverse line feeds (going up a line instead of down), forward and reverse half line feeds, underlining, overprinting, backspacing, compressed spacing, graphics, and proportional spacing.

If a new program requires it, install or "configure" it according to the instructions in your manual. Many Apple programs (such as the *Dow Jones Connector*) have automatic installation programs which are entirely "menu driven" and use their own formatting programs and procedures. They may even use a different operating system, such as the UCSD p-System, to further protect the program from copying. If you're using that type of program, make sure you follow the manual's instructions carefully.

After you have successfully installed your software, consider these tips which will help things run more smoothly.

When you have finished running your program and want to stop working for the day, *do not* just reboot to exit your program. Use the proper procedure for exiting your program, even though you may not wish to save any data created during the session.

Don't save your work on drive 1 with your program; you risk running out of room very soon and losing some of your work. Establish the good practice of saving it on drive 2. If for some reason you really must save on drive 1, you can make a special work disk combination of program and system files.

Don't be impatient. A considerable number of software steps take place during the bootup or program loading process before anything appears on the screen.

A final plea: *never* use your original program disk!! The more you handle it, the more likely you are to damage it through accident or carelessness. Make the backup copy and use that instead.

PROBLEMS: Software Safety

SYMPTOM: You can't get the program to work properly.

DIAGNOSIS: You need to answer a few questions first:

1. Can you see the program on the directory of the disk?
2. Are you getting an error message on the screen?
3. Has the program ever worked? At all, or with that copy of the disk?
4. What does the master disk label say? (Perhaps it uses the wrong version of DOS or uses another operating system.)

SYMPTOM: Your work suddenly disappears from the screen. If there isn't a power problem (see Chapter 2), look closely at what's on the screen.

DIAGNOSIS #1: If you have an Applesoft BASIC prompt or an error message, chances are you have accidentally struck a combination of keys which have caused you to exit your program. The computer is acting as though no program were loaded.
REMEDY: Reload the program and your work. Some programs automatically save the information you're working on when they are exited from; for other programs you must deliberately save your work as you go along. Try to remember what keys you hit so as not to hit them again until you want to.

DIAGNOSIS #2: If you do not have an Applesoft BASIC prompt or an error message see what else might be on the screen, such as your cursor. Perhaps your work has just scrolled out of sight but is still there somewhere. For example, if you hold down the space bar while using a word processor, your words can be "forced" completely off the screen. It is possible that the program has reached a point at which it is waiting for you to push a command key to get it to continue.

REMEDY: Check closely to see what is happening on the screen. If you can see your cursor, try to move it. If you can, move it up or down to see if you can get back to your former "place." If you can't, and you are not able to get any other message to come on the screen and nothing else happens, you will probably have to reboot. Again, you will lose any work you have done, if it isn't already saved. Before you do this, try using the command sequence that saves your work in the program you are using.

SYMPTOM: You can't find a file that is supposed to be on a disk.

DIAGNOSIS #1: If your program has data files on more than one disk, chances are your missing file is on the wrong disk.
REMEDY: Check the directories of "related" disks for the missing file. Also check your manual for a list of files and their corresponding disks.

DIAGNOSIS #2: You are using a different version of the program, one which doesn't require that file.
REMEDY: Check to see if the manual tells you which version of the program you should have and then look at the sign-on message of the program to see if the version numbers match. Often an out-of-date manual is used with updated software—the computer world runs so fast, manuals take longer to produce than the products. For instance, Muse Software substantially changed its popular *Supertext* and created two versions, a professional and a home/office version. The earlier manuals are not accurate when used with these later versions.

DIAGNOSIS #3: The file has been erased by the program after being used temporarily.

SYMPTOM: The program fails when writing to disk.

DIAGNOSIS #1: There is a write-protect tab on the target disk (probably in drive 1).
REMEDY: You should have saved the program on drive 2. Try to save again, specifying drive 2.

DIAGNOSIS #2: The disk in drive 2 is not initialized.
REMEDY: In this case, you could try saving on D1 if that disk isn't protected by write-protect tab. Unfortunately, your chances of staying in the program after trying to save on an uninitialized disk are slim.

SYMPTOM: The program fails while trying to load another program from the disk.

DIAGNOSIS: Your program is not installed correctly so it can't find the file it needs.
REMEDY: Reinstall the program; if necessary, specify the drive it should use for data storage.

SYMPTOM: After running fine for a while, the program fails.

DIAGNOSIS #1: You have a sample "demo" disk with certain built-in limitations: It is designed to "crash" at a certain point. Some accounting program demonstrators, for example, can handle 15 records.
REMEDY: Check the label of the master disk to see if you are running a demonstration or the correct master disk.

DIAGNOSIS #2: You are out of memory. There is not enough room either in your computer memory or on your disk to process or store the file you are working on.
REMEDY: Check the number of sectors (or blocks, in ProDOS) left on your disk. If there is sufficient space (for example, 80 sectors in DOS 3.3, or 160 blocks in ProDOS), the disk is probably not full. Check to see if this program needs the full Apple IIe memory capacity of 128K, and whether you have the necessary extra memory card installed.

DIAGNOSIS #3: You have created a file larger than the program's capacity.
REMEDY: Some programs are designed to handle data files no larger than a certain size. They can't handle larger files reliably. See what you can retrieve from the old crashed file by printing out whatever reports you can. (If the program lets you. Some accounting programs, for instance, have a FIX module that helps recover information from badly closed

files.) Then start a new file (or series of files) with whatever you've been able to save.

DIAGNOSIS #4: See if you are getting an I/O error from the keyboard or the printer. If you are, you may have a faulty connection which has interfered with the program.
REMEDY: Reboot the system, check your connections, try printing something from the screen (to check the printer), and reload the program.

SYMPTOM: Your program tells you that you are "Out of Room" and refuses to proceed.

DIAGNOSIS #1: You are out of disk space.
REMEDY: You could try swapping the disk you're using to store data with and resaving—that is, if you have spare formatted disks available.

DIAGNOSIS #2: Use FILEM (or STAT in CP/M) to see if you are out of room.
REMEDY: If you are really out of disk space, check to see if program is saving your work on the proper drive. The program may need to be reinstalled.

DIAGNOSIS #3: Some accounting programs can take only a certain number of records (e.g., two hundred), or even fewer if you have very "full" records. If you exceed that number, you'll get the "Out of Room" message.
REMEDY: Start a new data disk with a new set of records.

DIAGNOSIS #4: If your computer memory is full, a message to that effect should be displayed on the screen.
REMEDY: Save your work as far as you have gotten, then plan to put any further work into a second file.

SYMPTOM: You have installed your program with the correct name of your printer but you cannot get it to print.

DIAGNOSIS: This is most likely to happen with a serial interface and the newer printers such as the Toshiba or Okidata serial printers. In this case your software installation

doesn't have enough information to make the printer work correctly.
REMEDY: These cases usually demand custom installation. You will have to find the "escape sequences" (these are programming instructions) the software you're using needs to correctly tell the printer what to do. At this point, expert technical assistance is preferable to trying to do it yourself. If you can't get help, study the technical specifications section of your printer's manual carefully. Find the listing which corresponds to the questions your installation program is asking you. Sometimes printer manuals cover more than one model of printer (like car manuals that cover a series of related models). Make sure you are looking at the right information for your model of the printer. This may involve providing the installation program with information either in escape sequences, BASIC programming instructions, or hexadecimal (machine language) format. Keep a written record of *everything* you do if you attempt this yourself.

SYMPTOM: Your computer program won't stop running.

DIAGNOSIS: This "glitch" could be due to an abnormal power problem, mistyped keys, or a program "bug."
REMEDY: If you've waited a realistic length of time for the program to end, try to stop it using the Control and Reset keys. Warning: This reboots the system in some programs. If you can, save the data you've been working with before you try this.

SYMPTOM: You consistently get error messages while copying files from one disk to another, when loading software into the memory, or when saving data on a disk.

DIAGNOSIS: The disk drive head might be misaligned.
REMEDY: There are several software checks you can try if you suspect that one of your disk drive heads is misaligned. Try these before carting the main unit in for servicing:

1. If you have two disk drives and only one is giving you errors, try copying a text file, preferabaly several pages long, from one disk in the "good" drive to an empty disk in the "bad"

drive. Then compare the beginning and the end of the original and duplicate files: misaligned heads sometimes lose data.

2. Run a diagnostics disk, such as *Disk Copy II* (Central Point Software) which will give you a disk drive test. You *must* have blank disks ready for this test.

PROBLEM CHECKLIST

- Is your software correctly installed?
- Do you understand the program manual's instructions?
- Did you correctly specify your printer's width when you installed the program?
- Did you make a backup copy of your master disk *and* whatever data you have already saved?
- Have you formatted extra disks?
- Are the versions of DOS on your data disk and the program disk compatible?
- When you installed the program you're using, did you specify which terminal your computer emulates, and do you know this is correct?
- Do you keep your program disk in drive 1 and your data disk in drive 2?
- Do you know how to exit your program correctly without resorting to rebooting?
- Is there enough room on your data disk for the work you want to do or the data you'll need to save?
- Are you able to look at your disk directory?
- If you're trying something new or confusing, have you recorded what you've done?
- Are you paying attention to messages (especially error messages) on the screen?
- Can you see the cursor?
- Are you frequently saving your work?

7

DISK OPERATING SYSTEMS AND BASIC PROGRAMMING

The operating system is the "traffic cop" of your computer: It tells streams of data where to go; it won't let more than one or two things happen at once; it informs you of errors; and it creates order on your screen, in the RAM, and within the intertwining circuits.

There are two kinds of operating systems you might encounter in your Apple. You usually aren't aware of the first one, the monitor, which organizes the internal operations of your Apple. It not only takes care of things like the way characters appear on your screen, but helps the computer carry out the orders you have given the Apple in Applesoft BASIC. You are much more aware of the second system, the disk operating system (DOS 3.3 or ProDOS), because the vast majority of Apple computer programs are written to be used with DOS 3.3.

As soon as you put a disk in your disk drive and turn your computer on, the built-in bootstrap program loads (or copies) the disk operating system into memory. Because DOS 3.3 or ProDOS is totally stored on your disk, and there is no record of it in your Apple internal ROM memory, it will not be loaded into the computer without an initialized disk in the drive and the drive door closed. If you don't put a disk in the drive (if you have a drive attached), the disk will keep spinning—and nothing will come on the screen. If you don't want to use a disk-based program, but want to use Applesoft BASIC, you can press Control and Reset to transfer to the "immediate" mode of Applesoft BASIC.

The disk operating system allocates your computer's resources and follows your orders—allocating room on disks, keeping track of available space, preparing new disks with the INIT or format programs, organizing the transfer or copying of files from one disk to another, loading programs or data files from disk into RAM, and many other file management functions.

Some functions happen automatically; others need specific direction. You must specifically give a DOS command to initialize a disk, for example, but you don't have to tell the DOS how many tracks to put on the disk. You may instruct the DOS to copy a file from one disk to another, but you don't tell DOS where to put the file. This operating system is also responsible for how files are sent from your computer memory or from your disks to a printer or modem.

You probably won't be aware of the functions of your disk operating system all the time because the other programs you use take advantage of DOS capabilities. For instance, if you are working with a word processing program and want to save the text you have created on a disk, you will use the word processing program's command to save the file. But the word processing program will, in effect, hand over the file to the DOS. DOS will find room on the disk for the file, make an entry into the disk directory, and save the file. When you find a file and load it into memory, the word processing program requests DOS to find the file and have it loaded into the open RAM space. You won't be aware of this interaction unless an error occurs. If the error has to do with finding or recording files, it is probably a DOS error. The program you're using probably won't be able to do anything about this kind of problem. That's when it's very helpful to be aware of the power of DOS commands and utility programs. If you are unable to solve a problem within a program and it's related to saving or retrieving files, chances are better that you'll be able to solve the problem with DOS or ProDOS than from within the program.

Many DOS 3.3 commands, such as CATALOG, also work in Applesoft BASIC and even in the older Integer BASIC. Applesoft BASIC was designed for Apple by the Microsoft company, the same people who brought you Microsoft BASIC and created MS-DOS (which is similar to PC DOS, the IBM PC disk operating system). However, other types of DOS, such as IBM PC-DOS are not related to Apple DOS or ProDOS.

Earlier versions of the Apple II used different versions of DOS. If you are copying files from one Apple to another, be sure that you take note of the DOS version used for the older files. If they are earlier than 3.3, make a note of the version number. This is a good habit to acquire for file transfers in any disk operating system. Write the version number on the disk label (with a felt-tip pen) along with the description of what kind of files are on the disk, and the date you recorded them. That will help months—or even years—later, when even newer versions of DOS or, more likely, ProDOS, are released and you can't remember which disk is which.

You can use programs from earlier versions of DOS (3.2.1 or earlier—which used 13-sector disks) with your own DOS 3.3 16-sector disks, by using the CONVERT13 and MUFFIN program (on your DOS system master disk). It's better to convert your old files to a newer version DOS disk (using CONVERT13), so you don't have to go through the conversion process every time you want to use an old file.

If you are using ProDOS, the /CONVERT program on the ProDOS FILER menu allows you to read Apple DOS files onto a ProDOS-formatted, 35-track, 8-block disk. Many Apple programs written in DOS format will not work in ProDOS, because the program instructions that control the handling of data are different. Because they don't contain this kind of program instruction, text files should transfer and work in ProDOS without problems. If you have changed to a ProDOS-based program such as AppleWorks, you can probably convert old text files to the new format without too much difficulty.

Operating systems include utility programs that can make your disk "housekeeping" chores much easier. The sooner you learn how to use them, the sooner you will be able to avoid costly mistakes.

The very simple CATALOG command in DOS 3.3 tells you a lot about your disks. Not only does it list the file names on a disk, it tells you how much room in sectors each one takes up. This is very important information. You don't want to be merrily working away and suddenly run out of room on your disk. If you are working on very large files, be careful that the three-digit number showing the number of sectors in your file is not misleading. If your file grows to over 255 sectors, the "file size" column resets to zero, so that if you have a file size of 266 sectors, the file size display may only show you a file size of 11 sectors.

While you can guess how much room remains on your disk by subtracting the total number of sectors used by the files from the potential space available on your disk, the FILEM program performs this calculation and much more. It is one of the most useful programs you will use in DOS. You can see how much room is left on a disk with the "space on disk" option. Other options you can choose from the FILEM menu are how to rename files, copy individual files, lock and unlock files for protection against accidental erasing, and verify files. The VERIFY option on the FILEM program allows you to check your disk for file recording errors or bad sectors. When you have any trouble or get error messages when loading a file into memory from a disk, or saving a file on a disk, check the file immediately with the VERIFY program.

Your ProDOS CATALOG command shows you your disk directory together with the amount of space used and the amount remaining. It also has a FILER menu from which you can choose similar options to those in the DOS FILEM menu.

The COPYA program first formats a disk (whether or not it has already been formatted) and then copies the entire contents of one disk onto the formatted disk. It makes a mirror image of the source disk, paying no attention to what was on the destination disk, or whether it was "locked" or not. If anything was on the destination disk, it will be irretrievably destroyed and over-written with new material.

One common mistake people make is accidentally erasing their systems disk. (The one which enables them to prepare new disks and make safety backups of all their other software!) Because it is so easy to make this mistake with either the COPYA command or the INIT disk formatting command, it is a very good idea to put a write-protect tab over the notch on your master systems disk before attempting any disk copying or formatting. You can "un-erase" individual files with commercially available disk utility programs, but you cannot, by any method, "un-erase" a file on a disk which has been reinitialized or copied over.

When you copy an individual file from one disk to another or save a newly created file from the computer memory onto the disk, all of the existing files on the destination disk are respected. The DOS acts like a hotel reservations clerk and checks to see which "room" is vacant. If there is not enough room on the disk, you will get the "NOT ENOUGH ROOM" error message.

DOS is careful not to disturb other files during this process. When an individual file is deleted, the disk drive head doesn't have to go to the file's physical location and erase that spot on the disk. The list of files and their locations (by track and sector number) on the disk is kept on the directory track of the disk. When you give the command to delete a file, DOS simply crosses the name of the file off of the disk directory and makes a note that the area previously taken up by that file is available. If you change your mind about getting rid of the file, you can probably reclaim it from the "void"—if you haven't saved much more material on that disk.

Still another danger area, which can cause the irretrievable loss of disk files, is damage to your disk directory. The directory is used by the DOS not only to see what files are on a disk, but to find the track and sector locations of a file every time you ask for a file to be loaded into memory. Because the directory track (track 17 in DOS 3.3) on your disk is used so often, it is more susceptible to damage. If it is damaged, both you and your computer lose the ability to find out which files are where on the disk. Without that information, the DOS can't retrieve a file for you, nor can it tell what space is left on the disk.

At the beginning, while you are learning and experimenting with new software programs, you are likely to create a number of files which you won't want to keep. You can delete individual files with the DELETE command in DOS 3.3 (or from the FILE COMMANDS part of the FILER menu in ProDOS).

You can store up to 105 files on a single floppy disk formatted with DOS 3.3. Each file takes up a minimum of one sector, or 256 bytes. Each file name can be up to 30 characters (letters, numbers, and symbols) long. You can use spaces and periods in your file name. They must begin with an alphabet letter, and cannot include commas. ProDOS file names can be only 16 characters long, and must not include spaces or commas. The CP/M operating system, by comparison, only allows you to use eight alphanumeric characters, optionally followed by a period and a three-character ending. Spaces and special symbols are not allowed. In general, it is best to keep your file names as simple as possible, and to differentiate one from another clearly. Computers cannot second-guess your intentions, and you must type in a desired file name exactly as you saved it. That way you will get fewer "FILE NOT FOUND" messages.

When you want to clear the computer memory and start all over again, you will have to reset the computer using the Control-Open Apple-Reset key combination. (You may hear or read the jargon term "reboot" for this process; it is explained in Chapter 2.) At first you may have to do this quite often as you get stuck in unfamiliar programs. If you do get into trouble and need to stop your program or retrace your steps, try not to interrupt the program (by rebooting) more often than necessary. In many Apple programs the Esc or "Escape" key lets you backtrack one step at a time.

Always keep track of what you have in your directories. You will also want to think ahead of time about how you want to organize your files. It's good practice to note the actual date you started a disk. ProDOS has an optional time and date stamp for more specific record keeping. Not only is this an easy reference, but if you have files with similar names, the date and time will help you differentiate.

APPLESOFT BASIC

BASIC means "Beginners' All-purpose Symbolic Instruction Code." It was designed by teachers as an introduction to computer programming theory and to more complex programming languages. Because of its simplicity and adaptability BASIC is the first computer language most people learn. Once you know BASIC, you can adapt the programs you write to almost any other microcomputer. There are probably more ready-to-use programs written in BASIC than in any other programming language. Many accounting programs are written in BASIC; so are many games.

Magazines that cover the Apple usually include programs you can type into your own machine. Start by familiarizing yourself with a few simple commands, and by typing in a few simple programs. Do not spend hours typing in a huge BASIC program until you have had success running shorter ones. A program doesn't have to be long to be good. You will learn far more by not "byting" off more than you can chew!

Applesoft BASIC varies from the original Microsoft BASIC (or MBASIC), as well as other versions of BASIC. For example, the command to clear the values from variables in a program is CLEAR on the Apple, but CLR on the Commodore 64. More importantly, the memory architecture differs greatly from one machine to another, and graphics programs written for one computer would have to be almost entirely rewritten for the Apple. Data processing or calculation programs written in BASIC for other computers such as the IBM PC, or TRS-80 series will probably convert more easily.

You have two versions of BASIC on the Apple IIe. The one you will use more often is Applesoft BASIC. The other is the Integer BASIC which came with the first Apples, and which, as the name suggests, is only capable of processing integers: no decimal fractions can be used. If you try a divisional problem that will result in a fraction, Integer BASIC will give the answer in rounded-off integers. Integer BASIC is also incapable of handling any number larger than 32767 (or less than −32767). If your calculation exceeds those amounts you'll get an error message. In other words, if you're using BASIC for numerical calculations, play it safe and stick to Applesoft. However, if you are writing a text or display program, Integer BASIC should work just fine.

Applesoft BASIC is built into the permanent memory, or ROM, of the Apple IIe. When you boot a DOS 3.3 disk, you will see the message, "LOADING INTEGER BASIC," so both versions are available.

New Apple users often have trouble understanding that DOS 3.3 (or ProDOS), Applesoft BASIC, and Integer BASIC are not the same. Although certain commands work in all three modes, all of the commands which work in one mode will not work in another. When you are telling the computer to run an existing BASIC program, the correct version of BASIC is automatically invoked. You can tell which is which by checking the "prompt" on the screen. The ">" symbol is the prompt for Integer BASIC and the "]" symbol is the prompt for Applesoft BASIC.

ProDOS, which is now shipped with Apple disk drives, gives you faster access to the disk and more sophisticated methods of handling your disk directory. Unlike DOS 3.3, ProDOS will also work with the ProFile 5 megabyte hard disk drive, where organizing hundreds of files into directories and subdirectories is even more important than on the smaller 143K floppy disks. If you are using ProDOS, you should be sure to follow the advice given above about learning the fundamental file management utility programs: formatting and copying disks, checking disk directories, checking available disk space, copying files, and verifying questionable or damaged files. Then you should learn how to use the directory volume and "path/name" system. (This subdirectory file organization system is also used in IBM's PC-DOS.) With this system you don't have to scroll through the long list of files on your disk to find the one you're looking for. It allows you to divide the overall file directory into a tree-like system of multiple directories and subdirectories. Each file is identified by a combination of its file name and the names of the series of directories and subdirectories that contain the file. This set of names is referred to as a "path."

You can use the path/name format to find a particular file. If you forget which path/name your file is stored under, you can ask to see the over-all directory. You can specify the particular path/name to see the files on that path, or you can ask for a specific file and ProDOS will find it for you. To erase, copy, or rename a file listed under a subdirectory, you must also specify the path/name (or prefix) you have assigned to it. It requires some practice to fully understand and take advantage of this volume, directory, and path/name organization. The organization of subdirectories is particularly useful when you are using a hard disk drive and have hundreds of files to organize into one or two big directories. The power and flexibility it gives you for dealing with large numbers of files makes the learning experience well worth it.

PROBLEMS: Operating Systems and BASIC —

SYMPTOM: Operating system can't find file on disk. Message says "FILE NOT FOUND," or "CAN'T FIND FILE," or "BAD FILE NAME."

DIAGNOSIS: You have the incorrect disk in the disk drive, or the computer "thinks" the wrong disk is in the disk drive because you've used the wrong command or file name.
REMEDY: If you have the wrong disk in the drive, the file isn't there. Check your disk labels and switch to the proper disk. If you have the correct disk you may have incorrectly typed in the file volume number, drive number, or name. The computer won't be able to find the file under the name you used (*any* wrong letter or symbol will be considered wrong). Check for the proper file name.

SYMPTOM: Your program won't run when you try to run it.

DIAGNOSIS: You haven't specified the correct disk drive number.
REMEDY: DOS 3.3 assumes that you want to go to the last disk drive, slot number, and disk volume number accessed during your previous activity. You must specify the file name, number, slot number, and volume number if they have changed from the last activity. ProDOS will find the file even if it is not on the previously accessed disk drive number, which solves the problem (unless you have a duplicate file on another disk or in a subdirectory).

SYMPTOM: You get the "VOLUME MISMATCH" error message.

DIAGNOSIS: You are trying to use a new disk. DOS assumes the previous volume number until you specify a new number.
REMEDY: As above.

SYMPTOM: While trying to copy a file to or save a file on a disk, the "DISK FULL" message appears, even though the sector counts on your directory file listings indicate that you should have room available.

DIAGNOSIS #1: The program you have been using may be faulty and may have wrongly allocated the remaining disk space, perhaps for a temporary program or file which should have been discarded.
REMEDY: Use the FILEM and, if necessary, the VERIFY programs to check the largest files on the disk then try your activity again.

DIAGNOSIS #2: You have one or more files which take up more than 255 sectors. The directory listing of sector allocations is reset to 000 when it reached 255, and now shows the size of the file less 255 sectors.
REMEDY: Use the FILEM program, as above, to check the actual size of your files and the amount of room (the number of sectors) you have left.

SYMPTOM: A data file you've been using suddenly can't be found.

DIAGNOSIS: You have saved a second file using the same name, and DOS can only find the first one. Unlike some other operating systems, DOS doesn't check to see if a file with the same name is already on a disk before it records a new file. It is possible to have two files with the same name on the same disk.
REMEDY: Use the DOS program RENAME to change the name of the file you can access. Then there should be two different file names on the disk, and you should be able to access both.

SYMPTOM: The computer starts running a program during the booting process.

DIAGNOSIS: You may have a faulty "greeting program" which contains a command the computer cannot carry out. It will keep trying until you reboot.

REMEDY: You will have to reinitialize this disk. First, transfer all programs you need to save onto another working disk. Then, using a System Master disk with a greeting program you *know* is working correctly, re-INIT the bad disk.

SYMPTOM: While using the INIT program, your computer screen goes blank and you cannot continue the program.

DIAGNOSIS: You did not specify which drive to format and you have accidentally erased your master disk.
REMEDY: There is no remedy to recover files from a reinitialized disk. If you didn't make a backup copy of your master disk, you're in big trouble. However, the DOS 3.3 initialization program prompts you to specify drive 2, so you have every chance to carry out the process correctly.

SYMPTOM: A disk which has been reliable suddenly starts acting strangely. You get error messages or can't print files.

DIAGNOSIS: You may have accidentally rebooted in the middle of saving a file the last time you used this disk or the file you are trying to access on the disk. If so, you may have damaged the file.
REMEDY: Use the VERIFY utility on the bad file, or use FILEM to check the catalog of the disk. If possible, compare the problem file with a copy of the same file on a good disk. If the sizes of the two files differ, erase the file on the bad disk, recopy the good file, then proceed.

PROBLEM CHECKLIST

- Are you using the correct operating system?
- Are you using the correct version of BASIC?
- Have you planned out what you are trying to do?
- Did you print out your directory to keep track of your files?
- Are you using initialized disks?
- Have you used a correct file name, distinct from other names?
- Have you used an unacceptable symbol or extra space in your file name?

- If you see an error message, do you pay attention to it and do you understand it?
- Are you in Applesoft BASIC, Integer BASIC, DOS 3.3, or ProDOS, and do you know the differences among the versions?
- Do you know which is your data disk and which is your program or system disk—and which disk is in which drive?

8

WORD PROCESSING SOFTWARE

"Word processing" is an ambiguous term, but it refers to writing with a machine with any kind of electronic memory which allows the operator to store the work, revise it, or print it out—whatever "process" is needed. For writers and businesses with heavy or repetitious typing requirements, like general correspondence, writing and revising, form letters, estimates, contracts, reports, word processing is like a gift from heaven.

When you load your word processing software into your Apple IIe, the computer becomes a word processor. Naturally, for you to get full benefit of word processing, you have to print out those processed words on a printer. So the combination of word processing program, computer, and printer together make a working word processing machine.

Writers who change over from typewriters to word processors are usually ecstatic with the results. No more retyping of fifty pages of text to make ten little corrections. All of the changes can be made on the screen, then printed out—with page numbers automatically changed and without a trace of how the errors looked before they were corrected. The tedious character-counting necessary to center titles is done automatically. Changing pitch sizes, line spacing, and even font styles can be accomplished easily.

Some of the necessary adaptations to the ways of the keyboard and screen will take practice. Moving the cursor from one place to another in order to insert a line or start working in another position takes a little getting used to. People often hold down a key too long and watch their work disappear off the side of the screen. Apple IIe word processing programs are designed to display 40, 70, or 80 characters, or columns, across the screen. A typewritten page of 8½-by-11 inches, with adequate left and right margins, shows about 65 characters across. If you are using a word processing program which only shows 40 characters across, you can still format your printout to the width you want. Some programs can print up to 130 columns across, which can be useful for special printing needs (using a wide-carriage printer), but disconcerting if your screen display allows your work to scroll horizontally off the screen. If your work does disappear, you can scroll after it.

Scrolling refers to moving your text up or down (or left or right) to proofread or find a particular section. The cursor doesn't move over the text so much as the entire text moves past on the screen, like a player piano roll.

Cursor movement refers to the ability to move your blinking cursor around your text without the text itself moving. It is useful for reaching the position at which you want to enter text or for going back to already entered text to correct errors or rewrite a section. Once you have mastered these basic movements of word processing, you will be able to proceed smoothly through your text.

Unfortunately, a word processor will not write your work for you. You still have to think it up and type it in. Many writers have observed that, although word processors save time spent doing revisions, the actual creative process often takes longer, because writers are tempted to tinker with their work more on the screen.

Basic precautions need to be taken. If you are working on your Great American Novel, don't try to write it all on one disk. Make frequent backups. Print out your work occasionally. Accidents will happen, through no fault (hopefully) of your own.

The point is that if you have a backup copy ready to go, even severe hardware failures, program crashes, and human errors won't do any permanent damage. Any work you can't afford to lose should be backed up on a different disk. Although a temporary backup on the same disk may be useful in case you do something to your text that you'd rather not think about, it is not a safe long-term backup method. Make a complete duplicate of the work you've done on another disk and update it as often as possible.

Making adequate backups is even more important in office situations. I have known cases in which the office computer has been left unattended (with work on the screen and in memory) for just a few moments. When the operator returned the screen was blank. The work was gone. Without explanation, power outages, or curious people with itchy fingers lurking near the keyboard. I suspect that there was some momentary interruption or irregularity in the supply of power, which disrupted the operation of the computer. Poof, your work is gone!

People often ask how often they should save their work. I always ask them how much they can afford to lose, and save as often as that consideration dictates.

Word processing also allows you to print thousands of letters which look as if you have personally typed every one of them. This is made possible by merging mailing lists with written text. "Mail-merge" programs work by creating a symbol for each of the categories, or "fields," you need to insert in the text of your letter (such as FIRST NAME, LAST NAME, STREET ADDRESS, ZIP CODE) and then writing a letter (or report, or contract) with the symbols in the places where the real names should go. When you give the mail-merge program the correct command, the whole set of letters will be printed, with the real names in place of the symbols.

In fact, merging names and addresses with letters is a type of data base program function, although it's not as sophisticated as the commercial data base programs. The PFS series—*PFS: Write, PFS:File, PFS:Report,* and *PFS:Graph*—for example, is an excellent mailing list manager in a series of easy, menu-driven programs offering the user a combination of data file manager and word processing files. If you use *PFS:Report* with *PFS:File*, you can get neat mailing lists in any order you specify, such as zip-code or alphabetical order. It has limited design formatting capabilities, however.

On the other hand, one of the most popular business word processing programs for the CP/M operating system (which you can buy in combination with an 80-column card for the Apple IIe), is *WordStar*, which has a mailing-list companion program, *MailMerge*, that will not sort the names into alphabetical, zip, or any other order. [For high-volume addressing, a true data base management program is necessary.] When a large amount of data needs to be sorted and a large amount of disk space is needed, a fixed or hard disk drive, such as the Apple ProFile or one of the other proven hard disk drives such as the Winchester, Quadram, or Rana systems, should be considered.

When using a mailing list program, it is very important that the category names used in setting up the mailing list be spelled exactly the same way in the template for the letter and in the template for the list. Otherwise, the computer may not recognize the category name and won't know where to put the information to be merged. The wrong spacing or a missed comma can put the program completely out of whack. In 99 out of 100 cases, a mailing list problem is caused by a space, comma, period, digit, or letter out of place. Proofreading for this kind of mistake is really a form of program debugging.

Another powerful addition to your word processing program is a proofreading program, which you can use to catch your spelling and typing errors. After you've written your work, you can use the proofreader which usually lets you check and correct your text files.

Proofreading programs are a joy, not only to bad spellers, but to bad typists. Proofreading your own work is more difficult than proofreading someone else's. One of the unexpected drawbacks of word processing is that it allows writers to consistently misspell unfamiliar words throughout their otherwise beautifully and efficiently produced document. Fortunately, computer proofreading programs don't have these kinds of personal prejudices. The programs usually do not correct your spelling as you go along (that is, prevent you from misspelling—although larger mainframe computer programs are beginning to have this capability), but are used *after* you've saved your work on a disk. You run the proofreading program and in seconds it prepares an alphabetical list of all the words you've used in your work, checks those words against the words in its dictionary, and prepares a list of all the words you've used which weren't in its dictionary. You can then use the list to make the necessary corrections to your text files. You can ignore proper names which you know are right but aren't in the computer's word list, and you can check indecipherable or unfamiliar words against their use in the text if you can't remember the context in which each word was used. Most proofreading programs work only with specific word processing programs. If proofreading is an important feature to you, make sure you buy a word processing program which can be used with a proofreading program.

There are many good word processing programs for the Apple IIe. You have to weigh their positive and negative features yourself. Each program will have quirks that will take getting used to, but will also have good features which will attract you to it over the others. Once you get used to a particular program, you'll probably come to prefer it and resist changing to something else. Here are some purely subjective comments about the features and quirks of a few of the most popular word processing programs currently available:

Supertext, by Muse Software, has two companion modules, "The Address Book" and the "Form Letter" which give you "mail-merge" capabilities. This program also allows you to initialize disks from its menu, rather than having to do that separately in DOS. It has different modes for the initial creating of your work; a "change" mode, where you can go back and correct your work; and a "preview" mode, which shows you your text as it will look when it is printed out. You can choose particular margins and formats, but unlike some word processing programs, it does not allow you to print out your work using proportional spacing.

Bank Street Writer was the best-selling word processing program of 1984, according to *Infoworld* magazine. It uses an initial "enter text" mode which allows you to write everything you want to say without making any corrections, except to the line you're working on. Your right and left arrows will delete letters in either direction. When you've finished writing everything, you can go into the "edit text" mode. Your arrows will move the cursor normally in all four directions, so that you can delete text. On the other hand, you can't enter new text in this mode. For that, you must go back to the "enter text" mode. The escape key (Esc) moves you back and forth between modes, and a small heading at the top of the screen tells you which mode you're in. You can format your printout to be between 40 and 126 columns wide.

The size of your file in the memory buffer is limited because of the space the *Bank Street Writer* program occupies. As you are writing, you must check to see how much space remains before you run out of buffer space. If your file runs longer than 3200 words, you must save it on disk and open another file to continue. You can then run both files together ("chain print") when printing out.

Many other word processing programs for the Apple also have this feature of chaining together text files while printing out. This is a programming feature probably left over from the design of programs for the older, 48K Apple machines. The Apple IIe's total memory buffer size of 128K should be ample for most applications, but the programs must be able to use that available space.

Some word processing programs get around the limitation of buffer size either by holding part of the buffer file in a temporary file on the disk, or by dividing up the program itself into overlays, so that only the pertinent part of the program is taking up room in the RAM at a given time.

The Piewriter program and the *WordStar* program (if you're using CP/M) are examples of word processing programs which use overlays to conserve buffer space. Of course that assumes you have the disk space to hold the overlays, which, in word processing, is a fair assumption.

Bank Street Writer (from Broderbund) requests a password when you ask it to retrieve a file. This feature allows you to store private or confidential files on a disk to which other people have access. Just don't forget your password!

Applewriter II (from Apple), is another very popular word processing program. It gives you a file buffer of 27K in a 64K machine, and about 48K free with the maximum 128K memory installed. It also has three menu headings which you change by using your escape (Esc) key. You can enter text and make corrections under any of these three "modes." One mode shows the name of your file (if you've named it), the buffer size, and the direction of your "data line" (see below); one shows your margin and tab settings; one gives you an empty screen. The display is 66 characters across—which you can change to 80 columns on an options menu.

The "data line" determines which way the computer will search through your file if you ask it to search for a word or character string. This can be confusing if you decide you want to change "George" to "Fred" throughout your text file—a "global replace." If you inadvertently change the "data line" to face backward (toward the beginning of the file) and your cursor is at the beginning of the file, the search will be over before it started, and you will be wondering why the cursor hasn't moved to the Georges you can see on the screen. The "data line" arrow must be facing the same direction you want your search to go—in this case, toward the end of the file.

The command Control-D (for direction) easily changes the arrow, your attempt at a "global search" will be successful, and your faith in the wonders of computers will be restored.

Most of the commands in *Applewriter II* are designed mnemonically—Control-D changes the direction of the "data line," Control-E takes your cursor to the end of your file, Control-B to the beginning, and so on. *Applewriter* also has a temporary buffer that allows you to store between one word and one paragraph (defined as 1K, or 1024 bytes—about half a typewritten page). You can then either deposit this material somewhere else in your text or delete it.

Word Handler, designed for earlier Apple models, lets you have a "software-generated" 66-column display without any special adapter board. You can center a line, but only if you have hit Return at the beginning and at the end of that line. The page formatting for *Word Handler* is in "decimal inches" rather than in columns. You choose the way text will be printed out, and a record of those choices is saved in the file along with your text.

You can choose to have your work justified (straight left- and right-hand margins) or not, on every line. If you choose to have your text fully justified, you may end up with huge gaps in the middle of your text. The words are spread out on the line so that the left and right margins are filled. For some purposes, such as printing a newsletter in nice neat columns this feature might be attractive, but for business letters and reports it just looks like a mistake.

Word Handler won't let you use text files prepared by other word processing programs, nor can you use text prepared on *Word Handler* with other programs. The disk format is nonstandard (to prevent unauthorized copying). You are given two copies of the master disk, which includes programs to backup text files, erase, and rename files.

As with other software, the only way to make a choice about which word processing program is best for you is to try it out with your main application, or purpose for using it, in mind. Look for flexibility in screen and print display formatting, compatability with proofreading and "mail-merge" programs, simple command structures, and "safety net" verification of your commands.

PROBLEMS: Word Processing

SYMPTOM: Your *Bank Street Writer* program won't allow you to write.

DIAGNOSIS: You inadvertently hit Esc and went to the "edit text" mode, in which you aren't allowed to enter new text.
REMEDY: Pay attention to the headings on your screen which tell you what mode you are in, and use your escape key (Esc) to move to the mode you want to use.

SYMPTOM: Part of the line your cursor is on goes off the side of the screen as you are writing with the *Magic Window* (or similar) word processing program.

DIAGNOSIS: *Magic Window's* page width is set at 85 columns across while your screen will only display 40 columns. You can keep writing but only see half the line, while the other half will be scrolled off the screen to your right.
REMEDY: Go to the options menu and change the column width to 40. In the 40-column mode your work will "wrap" when it reaches the end of the line and you can view all of your text. You will still be able to print your work out at 80 columns across.

SYMPTOM: You are missing text in your printed-out *Word Handler* file.

DIAGNOSIS: You must specify the range of pages to be printed out from the *Word Handler* print menu. When calculating the range, you didn't include all of the file in the range you specified.
REMEDY: You will have to go back into the file to calculate the number of pages in your file, then to back to the print menu and enter the new page range.

SYMPTOM: Strange symbols appear in the printout.

DIAGNOSIS: If this happens in more than one file, your parallel printer cable may be too long. Parallel printer cables send a very low voltage and are not reliable over ten feet, especially if there are other electrical applicances nearby which may interfere with the cable transmission. (Serial cables have a stronger current and can be used over much greater distances.)
REMEDY: Check the length of your cable. If it is too long (twelve feet or more), you may have to have a technician trim off a few feet to get it under ten feet. This may mean rearranging your computer furniture, and moving the printer closer to your computer. Also check that no other electrical machine or appliance is causing interference.

SYMPTOM: In *Applewriter II* your command for "global search and replace" doesn't work.

DIAGNOSIS #1: Your "data line" arrow is aiming in the wrong direction.
REMEDY: Either use the Control-D command to change the direction of the "data line," and try your search command again; or use the Control-B command, which takes you to the beginning of your file and aims your data line in the right direction (forward) for your global search.

DIAGNOSIS #2: You may have spelled the word wrong in your search request, or you may have left out a necessary word ending, such as the letters "s" or "ed."

REMEDY: Requests for word searches within programs must be precise. Scroll through your text until you find an example of the word you're trying to search for and replace, and make sure you're spelling it correctly in your request.

SYMPTOM: Your *Applewriter II* command doesn't work.

DIAGNOSIS: You're using the wrong Apple key. Many Apple DOS commands use the Open Apple key; some commands in *Applewriter II* use the Closed Apple key.
REMEDY: Make sure you know and practice which key combinations work in which programs.

SYMPTOM: While working with the *Magic Window* word processing program, you try to load a text file, but the program can't find it.

DIAGNOSIS: You've used the wrong suffix in the file name. If you failed to use the ".MW" suffix with your file name, the program won't acknowledge it.
REMEDY: Use the RENAME utility to correctly name your file, then try to load it again.

SYMPTOM: You are trying to print a mail-merge letter, but the names show up in the wrong place—the street address is positioned where the last name should be.

DIAGNOSIS: The field separators (usually commas), which are used to separate distinct items of data, are in the wrong place. The computer is skipping one of the fields you want to print out.
REMEDY: Go back and look carefully at your data to see if you have inserted an extra comma. Remember that if you are using commas as field separators, the comma in "John Smith, Ph.D," will divide "Smith" and "Ph.D" into two fields. If you need to include punctuation in an item of data, make sure it isn't your "separator" character. You can also split the data into more fields and leave the punctuation as part of the text.

SYMPTOM: One of your mailing list categories will not print out. Instead, your category name is appearing, e.g., "Mr. *first* Smith" instead of "Mr. John Smith"; then "Ms. Doe" instead of "Ms. Jane Doe."

DIAGNOSIS: The category name in your template letter isn't exactly the same as the category name you used in your mailing list model. For example, perhaps you forgot that you had used "name" as a category for first name, and not "first."
REMEDY: Go back to the mailing list and check that the category name you have used in your form letter corresponds exactly with the one you used in your mailing list.

SYMPTOM: When printing out a document, the left-hand margin of the printout is uneven; several lines start at one margin, other lines start at a different margin.

DIAGNOSIS: You have accidentally unplugged and then replugged your printer cable, or you have a loose printer cable connection.
REMEDY: Once you start printing out a document, you shouldn't touch the printer unless something is going wrong. If you unplug the printer cable, a whole chunk of data will be lost. This may not be immediately apparent because most printers have at least a half page of internal memory. Even if you don't lose any words, the signals from the computer telling the printer where the printhead should be positioned will be affected. This causes the uneven margin. (See Chapter 4 for more information on controlling printers.)

SYMPTOM: Part of your work disappears off the right or left side of the screen.

DIAGNOSIS: You probably haven't lost the text; your "word wrap" simply has been disengaged or has not worked. This can also happen if you hold down a letter so that it repeats. Then the word processing program doesn't know where the word ends, and it can't "wrap" it to the next line.
REMEDY #1: Try hitting Return. This should take you back to the left margin. If you did hit a repeating key which has caused a line to go off the side, move the cursor to the

repeated characters and delete them. You should also check your margin setting. In some programs it's fairly easy to accidentally set your right margin to some absurdly high number like 125—only a part of which can be shown on the screen. Lines or blocks of text can get "lost" on the part of the page out of view.

REMEDY #2: If you do not want to erase the material which is out of place, go above it and try scrolling vertically through it, or try reformatting, or "cleaning up" the screen. Usually the line will fall back into place.

REMEDY #3: If neither of the above works, try saving your work and exiting the file. Then reload the file.

PROBLEM CHECKLIST

- Do you know the difference between cursor movement and scrolling?
- Have you backed up the most recent version of your work?
- Are you saving your work on the correct drive—the data drive (usually D2)?
- Is your software correctly installed or configured to use the "special effects" available on your printer?
- Have you written down your mailing list category or field names so you can remember the exact spellings you used when preparing the template letter for merging with the list?
- Have you checked your mailing list data for extra commas or other punctuation which may be confused with the separators?

9

ELECTRONIC SPREADSHEETS

ACUTE TECHNOPHOBIA

Mr. Jones is a businessman and private pilot. (He recognized the aircraft instruments in the *Flight Simulator* program immediately.) I first met him when he was looking for a computer to keep track of his business accounts. He shopped around very carefully, and made three trips back to the store to check prices and to make sure the equipment he was thinking of buying could do the things he wanted it to be able to do. He brought in examples of his business requirements, which included setting up a small data base program to manage attendance records at his daughter's day care center and setting up an electronic spreadsheet to manage his cash flow and chart of accounts.

Even before he purchased the computer he was shown, in three two-hour sessions, how to set up a spreadsheet for his bank accounts and record of payments, and a data base program for the preschoolers' information. Even so, when he finally took his computer home, set it up, and sat down in front of the screen, he was on the phone to the store almost immediately, incoherent with panic. This man regularly flies a twin-engine airplane and is used to looking at dials and screens and interpreting the data on them to make critical decisions. When he tried to use a spreadsheet program on his computer, though, he could not "see" the simplest information on the screen. He was too panic-stricken to think clearly about what he might have to do to proceed. "How did he ever get off the ground?" I asked myself.

There is no need to panic when faced with a spreadsheet program (or any other computer program, for that matter). Spreadsheets are easy to use, once you comprehend the basic principles on which they work. The idea that the spreadsheet represents a large grid into which you can put numbers is easy enough. But sometimes it takes a little longer to comprehend the second critical concept: the part about putting in formulas that define the relationships among the different "cells" in the grid.

The most popular spreadsheet programs are *VisiCalc*, the original spreadsheet which first gained its fame on earlier Apple and Radio Shack computers (now with *VisiCalc Advanced* to take advantage of the increased memory of the Apple IIe), *Multiplan*, and *Magicalc*. With the CP/M card in your Apple, you can take advantage of a few more programs: *SuperCalc*, *Perfect Calc*, and *CalcStar*.

Besides these programs, there are others written for specific purposes or applications, such as real estate, accounting, and stock portfolios. Some software manufacturers sell only "templates," additional programs designed to work with a spreadsheet such as *VisiCalc*, with titles and formulas already in place; you just have to fill in the relevant numbers for your own calculations.

Combining word processing, spreadsheets, and data base functions, there are integrated software programs such as *AppleWorks*, *Incredible Jack*, and *Jane*, which have all three functions built into one program. Usually the advantage of having everything in one program is counterbalanced by weaknesses in at least one or even two of the three areas; this may not matter to a user who wants it "all in one" and doesn't want to have to learn three different sets of commands or bother with changing disks.

Although the different spreadsheets use different commands to accomplish their goals, their basic concept is the same. Once you can run one spreadsheet, you can quickly learn to run another. The examples I use here are mainly with *VisiCalc* and *Multiplan* because they have been in use for some time and have proved their versatility. The same principles discussed here apply to all spreadsheet programs.

A good way to get started with spreadsheets is to work on a small, simple program such as a checkbook balancing or even a stock-market evaluation program. If your owner's manual doesn't have sample data you can enter from scratch, go ahead and buy a book that does have easy sample data. If you can't find such a book for your own brand of software, go ahead and buy one for another spreadsheet program; once you understand such commands as moving the cursor, recalculating, specifying numeric or text entries, and entering formulas, you'll find that the examples are easy to work with and learn from.

There are some practical things you should know when working with electronic spreadsheets. Your salesperson may have impressed you with the large number of rows and columns your program can handle, but probably neglected to say that few microcomputers have the memory capacity to take advantage of all the cells in the spreadsheet. So even though you may have 63 columns across and 254 rows down, and you won't be able to fill in all 16,012 cells. Remember, each cell averages 9 digits in width, so you would need an available internal memory of at least 144K just to hold the entries, not including the memory taken up by the program and the buffer space required for doing the calculations. The realistic maximum capacity of a spreadsheet is closer to 1,000 entries. Some programs handle less: *CalcStar* in CP/M, for example, is capable of only about 600 entries. Your spreadsheet's manual should tell you the limit; this limit depends on the specific piece of software, the size of your Apple's RAM (64K or 128K), and your disk space. Be sure you know the limits of your spreadsheet before undertaking a large project, and know how to translate it into columns and rows.

Another consideration is the time it will take to make changes. As you fill up a spreadsheet, or as you add more and more formulas, it will take longer to make calculations. *Multiplan* has an automatic recalculation mode in which the results are updated every time you change an entry connected to an entered formula. The program goes through each formula on the spreadsheet and recalculates it, whether it needs to be or not. This procedure can take so long that it can tie up your keyboard. There is a simple way to avoid this delay. You can go to the "options" menu and turn off the "automatic recalculation" mode. Later, if you want, you can turn this mode on again.

Spreadsheets are extremely versatile. For instance, if you are designing a monthly check register, you can design one spreadsheet and save it under 12 names, one for each month. Because it's so easy to store data under several names, you must be careful to differentiate files.

Spreadsheet file names usually require an ending to identify them as spreadsheet data files. Some will not be reloaded unless this ending is present. *SuperCalc* files in CP/M must have the three-letter ".CAL" ending.

If you forget to name your file as you go to save it for the first time, you may be given an error message, such as "NO FILENAME." *Perfect Calc* (in CP/M) will give your file a default name ("default.pc") if you neglect to name the file yourself. That's fine as long as it happens only once. If you open a second file and store it without naming it, the program will give it the same "default.pc" name, and over-write the first file saved under that name.

It is easy to forget to save your work before you leave the spreadsheet. For instance, a simple "/Q" in *VisiCalc* will do this, but you must also type a "Y" or "N" to verify that you really want to exit. If your keystroke is too impulsive, and you accidentally hit a "Y," the spreadsheet's contents will vanish forever. So be extra careful to save your entries as you go along. Back up your data disks and keep them updated.

Once you have stored the files you're in under a given name, your repeat storage commands go automatically under the same name, over-writing the first version. To try out different versions of spreadsheet formulas, you might want to store those versions under different names. You could number them "SPREAD2.PC," "SPREAD3.PC," for instance, or other, more clearly different names.

If you have spent a long time entering complicated formulas and now want to experiment with them, protect the time you've spent by working with a copy, not with the only disk containing the formulas. Sometimes one wrong keystroke can obliterate a row, and if that row contains a formula, you will have lost hours of work.

PROBLEMS: Electronic Spreadsheets

SYMPTOM: While you're entering data and formulas into a spreadsheet *CalcStar* or *VisiCalc,* a message appears: "MEMORY/BUFFER FULL" or "NOT ENOUGH MEMORY."

DIAGNOSIS: You have reached the limit of available working RAM. You have made as many entries as this worksheet can hold.

REMEDY: Immediately save what you have so far, if the program will allow you. If it won't, but simply keeps giving you the error message, try deleting the last few entries you made, by columns and/or rows (*not* just individual cell entries—if you delete only a single cell entry, the program will still use memory to show the existence of that cell, even though it's empty). Start from the outermost edge of your spreadsheet and work your way in. Try again to save after each deletion; you should be able to do it within two or three tries.

You can also print out your spreadsheet immediately so you will have a hard copy of what you've done if anything else goes wrong with the disk save. And next time, check the program manual to see if you can keep track of how much RAM you have left as you are building your spreadsheet.

SYMPTOM: The "MEMORY BUFFER FULL" or "NOT ENOUGH MEMORY" error message appears when you try to reload the spreadsheet.

DIAGNOSIS: The spreadsheet is at the limit of what the program and your memory buffer will hold.

REMEDY: If the program will not allow you to reload all of a spreadsheet, try reloading just a portion of it (when the spreadsheet asks what ranges to load), then save that portion separately under a different file name. Reload the rest of the spreadsheet under a third file name. That way you can reconstruct the parts you need without the danger of completely losing the whole spreadsheet.

TIP: To get rid of blank but allocated space (formerly used cells, or cells near other cells, which are being used) in a spreadsheet, delete rows and columns, not just individual cells. Save the sheet, then clear the screen or quit the program, and reload the program and the file. Since only the part of the spreadsheet has been saved, you will have a little more free space in which to complete your spreadsheets.

SYMPTOM: Your spreadsheet appears to give the wrong answers to a formula you have entered.

DIAGNOSIS #1: The program's order of recalculation may be different from what you expected.
REMEDY: Check which way your spreadsheet recalculates first, across (by rows) or down (by columns). Most spreadsheets recalculate across first. If your order of recalculation turns out to be the opposite of what the program uses, it could be the cause of the difference in results.

DIAGNOSIS #2: Your formula is being calculated before your data is entered. The order of calculation for a spreadsheet usually goes from left to right and from top to bottom (following the order in which data is usually entered into the spreadsheet). If you have entered a formula which depends on a number entered further along to the right or below the formula, you may get an unexpected result. You may be able to make changes in the order of calculation or recalculation.
REMEDY: Check your formulas and entries, and your spreadsheet's order of recalculation. It's most likely that one of the formulas you've stored doesn't work the way you think it does.

DIAGNOSIS #3: This could represent a program error; some spreadsheets, such as *CalcStar,* give the wrong answer when calculating small percentages in a certain way.
REMEDY: There isn't much you can do, except avoid that particular calculation.

SYMPTOM: As you are building a spreadsheet in *Multiplan,* you notice it is becoming harder and harder to enter new material; the keyboard seems to be "locking up" temporarily.

DIAGNOSIS: *Multiplan* has an "automatic recalculation" function which is on, or is the "default," when you load the program. You will have to turn this mode off to prevent it from recalculating every time you add or edit a number connected with an existing formula in the spreadsheet.
REMEDY: Use the tab key (or the letter "O") to go to the "Options" menu, where you can turn off the automatic recalculation mode.

SYMPTOM: A formula entered in a spreadsheet cannot be found.

DIAGNOSIS #1: You didn't save that version of the spreadsheet after you entered the formula.
REMEDY: The only thing you can do in this case is reenter your work on the spreadsheet. Sometimes it's hard to remember whether you have saved your work. If in doubt, do it again. It certainly can't hurt.

DIAGNOSIS #2: The formula is there, but in a different place.
REMEDY: Have one more look around the spreadsheet. Try printing out or "dumping" the contents of the cells, and seeing if the formula appears. Note its coordinates.

SYMPTOM: Your printer doesn't print all of your spreadsheet. The numbers at the extreme borders are missing.

DIAGNOSIS #1: If you are printing out your spreadsheet on 8½ by 11 inch (or 80-column) paper, you may not have set that width for the spreadsheet program. Spreadsheets are usually set to print out on 15-inch-wide (132 column) paper.
REMEDY: Check the printing configuration procedure in your spreadsheet manual. Follow the directions to install or configure your program directly.

DIAGNOSIS #2: You haven't specified all the desired "ranges" in the spreadsheet that you want printed.
REMEDY: You have a chance, in both *VisiCalc* and *Multiplan*, to specify what portion of the spreadsheet you want printed out. In *VisiCalc* this is the "Setup &" command. It automati-

cally starts at Row 1, Column A, but you will have to specify the extreme lower right of the spreadsheet. *Multiplan* won't start automatically at Row 1, Column 1—you must specify both "ends" of the "range" you want printed. Make sure that your ranges are named before you print.

SYMPTOM: When you reload your spreadsheet file, you find there's nothing there. None of your numbers can be found in the file.

DIAGNOSIS: You might have written over your full file with an empty file of the same name; or your full file is stored under a similar, but different name.
REMEDY: To see if your lost file is on the disk, exit the empty spreadsheet and double-check the directory. If you see a file with a similar name, try reentering the program and loading the other file. If your full file has been overwritten by an empty spreadsheet you saved under the same file name, you cannot recover it.

SYMPTOM: When you try to type something into a cell, you are unable to, and the program gives you an error message.

DIAGNOSIS #1: The cell is already part of a formula, and the information you are trying to enter doesn't fit the formula. Or the cell is protected or allocated.
REMEDY: Review your formulas in nearby cells to see if the cell you were trying to use was part of a formula range. Then decide if you want to change the formula or change the cell into which you were entering the information. Until you do one or the other, you will not be able to get rid of the error message.

DIAGNOSIS #2: In *Multiplan*, you can lock either the cells or the formulas. You may have locked a formula, and now cannot find the parallel command to unlock it in the "Lock" command.
REMEDY: While the *Multiplan* commands to Lock or Unlock the contents of a cell are clearly evident, there doesn't seem to be a command to unlock a locked formula. However,

specifying "cell-unlock" (through the Lock command) will also unlock a formula.

SYMPTOM: Your spreadsheet commands aren't working, yet you know the grid isn't full.

DIAGNOSIS: You failed to notice or act on an important spreadsheet message.
REMEDY: Pay attention to the screen and the messages there in front of you. Clues to your problem are often printed out in a little phrase at the bottom of the screen.

SYMPTOM: When you are trying to find your previously saved spreadsheet, the computer says "FILE NOT FOUND."

DIAGNOSIS: You haven't typed in the full (or correct) file name. For instance, in *Perfect Calc,* you must type in "filename.pc," and *not* just "filename."
REMEDY: Remember to always request files by the full file name.

SYMPTOM: Your spreadsheet is taking up more memory than you think is necessary. (Any of the spreadsheets may have this problem.)

DIAGNOSIS: The "ragged edges" of the spreadsheet have forced it to be larger than you realize. The spreadsheet forms a rectangle from A1 to the farthest column and row, even though that may include a lot of blank space. Every cell within this rectangle takes up room in memory, even if it's empty.
REMEDY: Rearrange your spreadsheet to leave as few blank cells as possible.

SYMPTOM: When you try to enter a calendar date as MM/DD/YY it is calculated and a complicated decimal appears in the cell.

DIAGNOSIS: You have not specified that you are entering text instead of values. (The same thing can happen with check numbers.)

REMEDY: Enter the necessary "signal"—the "Alpha" command in *Multiplan*, or a quotation mark in *VisiCalc*—to let the program know you want the numeric entry to be treated as a label, not a number.

PROBLEM CHECKLIST

- Do you know what you want as a finished product?
- Have you (or has the program) used the correct name ending for your spreadsheet data file? Have you used the correct name to reload the file?
- Is your printer wide enough to print out your spreadsheet, or have you compressed the print or adjusted your program's printer configuration accordingly?
- Did you save your work before exiting the program?
- Have you kept track of how much room you have left on your spreadsheet?
- Have you protected cells that contain essential formulas?
- Do you know your program's order of recalculation so you can use the same order?
- Are you using either upper or lower case for your commands, as required by your program?
- Are you overlooking an important screen message?
- Did you specify text instead of numeric entries (where appropriate)?

10

DATA BASE MANAGEMENT SYSTEMS

Data base management systems (sometimes called DBMS in computer jargon) are very popular and useful tools perfectly suited for computers. With a data base program, you can organize mailing lists, inventories, bibliographies, Little League team schedules, recipes, and anything else which needs to be stored, retrieved, and sorted according to categories.

There are two parts to the creation of a data base. First you must decide what material you wish to have collected. For example, if you are organizing a Little League, the names, telephone numbers, and ages of the children would be important to have.

Once you have decided on the information categories you want collected, you will have to decide which of those categories will need to be sorted. Taking the Little League example, you may wish to sort by zip code or telephone prefix in order to organize car pools easily. Along with that, you may wish to sort the times and dates parents are available for volunteer work. It's important to consider what kind of data you'll need to sort before you actually start entering the raw information. You decide how you want to organize your information, then fill in the blanks. But you'll have to follow the rules of the computer program you're using.

There are two types of data base programs, described as "relational" and "hierarchical." The most popular data base programs available for the Apple and most other microcomputers are relational. These are easier to use than the hierarchical programs which require more programming experience.

There are also some variations among relational data bases. For instance, most of the Apple DOS-version programs have menus to help you design your organizational structure.

The most popular data base programs for the Apple IIe include *PFS:file* and its companion *PFS:Report, DB Master, VersaForm, Quick File II & IIe, VisiFile,* and the *AppleWorks, Incredible Jack,* or *Jane* integrated programs. If you add the CP/M card to your Apple, you can also take advantage of the best-selling *dBase II* or *InfoStar.*

These programs have very different capacities and levels of difficulty. The programs in the *PFS* family (*Report, File, Write, Graph,* and *Access*) as an example, are known for their ease of use. Each module has several menus which help you create forms, print, change, or delete entries at different stages. The trade-off for this ease of use is that the sophistication of your generated reports is limited. On the other hand, the best-selling *dBASE II* starts you off with a single dot on the screen, which is your prompt to start creating a form. You have to know the commands to start creating your data base. If you do something wrong as you go along, the program may not tell you by giving you an error message. You may enter a lot of data and not find the "bug" in your data base design until later. However, once you have mastered the data base, you can design extremely sophisticated and complicated programs.

To avoid being disappointed with your data base program, make sure the one you buy will, in fact, be capable of doing what you need done. If you don't have any specific needs at the moment, but are thinking of putting your coin collection into the computer, you will probably be happy with a menu-driven program which is easy to use. On the other hand, if you want an interactive program which rings up sales and automatically subtracts the sold item from existing inventory, not only are you going to have to have a very powerful program, you may need to get an experienced consultant to design it for you and work the "bugs" out.

There are bound to be "bugs" in your program—little things that don't quite work the way you wanted them to. Designing a data base system is really a form of programming. Not only do you have to consider how many categories, or "fields," your program can handle, you also have to consider how much room is available on your disk to hold the material you want sorted, and whether enough extra room is available for the temporary file the program must create while the sorting process is going on. Therefore, don't expect to store the inventory of your warehouse full of auto parts on the 143K available to you on a DOS-formatted Apple floppy disk. If you're putting together a major project, and you're in doubt about how much room your project will take up, make an appointment with an expert. The consultant's advance time will be well worth the money in saved grief for you later.

I received a frantic call one time from a client who had been waiting several anxious minutes for his thousands of names to be sorted into order by zip code. Has the computer "hung up," he wanted to know, or should he keep waiting? Then the "OUT OF SPACE" message came on the screen. He had had plenty of room on his disk for the original mailing list, but hadn't anticipated the program's need for *double* the storage space in order to rewrite the file in the newly sorted order. He had to start all over again. Luckily for him, the program didn't erase the original file, so he didn't lose his file of names.

In all computer operations, but especially in with data base programs, backing up your work is essential. Not taking this precaution is inviting disaster.

In data base work, as in accounting applications covered in the next chapter, *nothing* is as important as your data. Your computer can be replaced or another one borrowed temporarily. Your copy of your computer program can be replaced. But nothing can replace your data. If you are using your computer for your business, please pay extra attention to my advice about care for your software and about making backups. Take the extra time to learn the operating systems and a little more about the program you're using. It may avoid a data loss disaster.

PROBLEMS: Data Base Management Systems

SYMPTOM: You get a "DISK FULL" message while sorting.

DIAGNOSIS: To sort a file, data base programs must have available disk space equal to the size of the original file.
REMEDY: Before you begin your sort, determine the size of the data file you are going to sort, then check your directory using CATALOG or FILEM in DOS 3.3 to see how much room you have left. If necessary, transfer your data file to a new, formatted disk to make sure you have enough room. Data base programs set up temporary files while they are sorting, then erase them when they have finished the sort.

SYMPTOM: Your printout does not include the field or category you wanted.

DIAGNOSIS: The field or category name was spelled wrong.
REMEDY: You must remember exactly how you spelled the names you used when you designed your original form. The computer doesn't know English (or any human language) and can't guess what category names you are using.

SYMPTOM: You get an "EXTRA IGNORED" message from Applesoft while loading a data file.

DIAGNOSIS: This message occurs when an extra comma is encountered. In some data files, a comma is used to separate data fields. If you have used commas as separators, you have an extra one there, which will give the program one more piece of data than it expects, and your legitimate data item will be ignored.
REMEDY: You may have to go back and reedit your data files to eliminate the extra comma.

SYMPTOM: In *PFS:File*, the message "FILE NAME CAN ONLY HAVE 8 CHARACTERS" appears.

DIAGNOSIS: Although DOS allows longer names for its files, *PFS:File* allows only 8 letter file names used with any of its functions: master files, data files, and print formatted files.
REMEDY: Rename the file as allowed in the program. Keep the names short; if you like, use names that combine letters and numbers.

SYMPTOM: The computer never stops sorting.

DIAGNOSIS #1: If the screen is blank and the drives are occasionally working, the program could be running. Data base programs need time to sort.
REMEDY: If the sort doesn't stop after a half hour or so, and you had fewer than two or three hundred records, you have a problem. Talk to someone familiar with your program, if at all possible. If you had more records (a thousand or more, say) and a complex sorting command, the computer is probably still running and you should leave it alone for an hour or so. If you get no "error" or "finished" message by then, reset and have a good look at your program. (NOTE: If you reset while a sort is in progress or while the computer is working, you may lose data files.)

DIAGNOSIS #2: There's a programming bug: The instructions the computer is following are making the computer look for something that isn't there, or the data base program itself has a bug (although that's less likely).
REMEDY: Once the computer has had plenty of time to complete the sort (more than an hour, let's say) and it's obvious it's not going to stop, you might as well reboot. Then print out a copy of your program and try to follow it through the way the computer would, making *no* assumptions about what you thought you were asking the computer to do. You may find the problem there. You could also try recreating the problem by sorting a small amount of data (ten records, for instance), then trying to track down the problem that way.

TIP: Always back up your data disk before trying surgery on your data base. That way you reduce the chance of losing your original work.

SYMPTOM: You cannot get *PFS:File* to sort into alphabetical order on the screen.

DIAGNOSIS: By itself, *PFS:File* can't sort. So you won't be able to see your randomly entered list nicely rearranged into alphabetical (or any other except sequential) order.
REMEDY: Purchase the companion program, *PFS:Report*, which allows you to resort your files into whatever order you want and store them in order on your data disk. This program also can be used to compute any numeric data in your *PFS:File* files and give you a printed result in the report. (For example, the program can total a simple inventory list.)

SYMPTOM: You cannot get your *PFS:File* and *PFS:Report* to give you a sorted printout.

DIAGNOSIS: If you have only one disk drive, you will be limited to printing out your *PFS:* data in the reverse order of the way you entered the data. (This does *not* mean that the form you designed will be in reverse order. Within each record entry, the categories will be in the order you entered them (for example, "first" name then "last" name). Only the order of the records is reversed. If you entered a name such as "John Zanzibar" last and "Jane Anastasia" first, your printout will produce the "John Zanzibar" record data first.
REMEDY: Be aware of this before entering a lot of data. If you can, enter the data in the order you want it printed out—or get a second disk drive.

SYMPTOM: After designing a new *PFS:File* form you begin entering data, but only the first name you save comes up.

DIAGNOSIS #1: You didn't create field names before you started putting in your entries. Instead, the program is treating your entries as field names.
REMEDY: You must design a form first with generic categories such as "first name:", "last name:", "street address:", and "zip code:". (Be sure to use a colon after every category name.) Once your form is designed and saved on disk, you can begin entering the actual data: names of people, etc. You can't just start entering the names.

DIAGNOSIS #2: You didn't use a colon to mark the end of a category name.
REMEDY: Every category in your form must end with a colon, otherwise the program doesn't recognize it as a category.

SYMPTOM: In *DB Master*, you have designed a long, 2-screen form, and are unable to exit and store the new form on your disk.

DIAGNOSIS: You have not entered the correct command to tell the program you are finished designing the form.
REMEDY: When you are finished creating categories, you must enter a zero (0) to tell the program you're finished.

SYMPTOM: When you try to back up a data diskette with the *DB Master* "File Maintenance" program, you can't do it.

DIAGNOSIS: Your *DB Master* collection of sub-programs are on two disks. You have only one of these two disks in one drive, and a data disk in the second drive.
REMEDY: To use the "File Maintenance" option, you have to begin with *both* program disks (#1 and #2) in your two disk drives. You will be prompted to insert a data diskette.

SYMPTOM: Your *DB Master* program won't accept your password.

DIAGNOSIS #1: Using and then not remembering a password is deadly. If you don't have a particular reason for confidentiality, do yourself a favor and use the "Master" option when you are asked about using a password.
REMEDY: If you are sure the password you remember entering is correct but the program won't accept it, try using the Shift key, and reentering the password in capital letters.

DIAGNOSIS #2: You have the right password letters, but forget that you added a space or another symbol before, in the middle, or after the word.
REMEDY: Write down the password variations, including adding a space before or after the word, and then try them.

If you are successful, make a prominent note of the password that gave you trouble. Then go to the "Changing Passwords" option on the File Maintenance Menu to change to an easier (for you) password.

SYMPTOM: In *DB Master*, you have entered many new records, but when you go to review them, they aren't there.

DIAGNOSIS #1: Although the brief "control" menu summarizes your options, it's easy to overlook the right one while you're getting used to using your newly created form. You probably forgot to save the records by using Control-A ("add") after each one. If you just enter a return, or use Control-N ("next page" in version 3.2) or Control-G (go to next page" in version 4), you get a new blank form, but the data just entered is not recorded.
REMEDY: You cannot recover the entries you lost, but you can prevent the loss from happening again. Make sure you always use Control-A to add a record to your data base after you have completed the form. After entering a few records, double-check to make sure they are being saved by exiting and then reentering the program. The right way will soon become automatic.

DIAGNOSIS #2: You did not exit the program properly and the new entries were not properly recorded.
REMEDY: You must exit the program correctly, choosing "Close Files and Exit" from the Main Menu selection.

PROBLEM CHECKLIST

- Do you have enough room for the program to store the additional temporary sorting or indexing file on your data disk?
- Have you designed your data base with enough categories to accommodate all the data you want to use (and maybe a little extra)?

- Remember: Backup, backup, and backup.
- Are you sure the names you're using to operate the program (for sorts, printouts, etc.) are the same as your original field names?
- Are you sure your data is being saved on the disk, not just accumulated in the computer's buffer memory?

11

ACCOUNTING AND BOOKKEEPING SOFTWARE

ABOUT ACCOUNTING PROGRAMS

First, please read the introductory paragraphs of the previous chapter on making backup copies. Once the program setup is completed correctly, the entering and processing of data should go smoothly.

Many accounting programs assume that you have some knowledge of accounting. There may be technical accounting terms in your software manual which refer not only to the program itself but to accounting practices in general. Therefore it will be helpful to have an introductory accounting book on hand, as well as your software manual, before embarking on the transfer of all your financial dealings onto floppy disk.

(If you do convert all your accounting records to floppy disk, be absolutely sure to keep up-to-date printouts and backup floppy disks. Larger companies often keep their backups off their premises and/or in vaults for added protection against catastrophe.)

In the same vein, accompanying manuals assume a basic knowledge of DOS, ProDOS, or Applesoft BASIC utility functions, such as the COPYA, COPY, and FILEM or ProDOS

UTILITY programs. Many accounting programs are written in some form of BASIC. The CP/M-based accounting programs available to you if you have a CP/M card are also often written in BASIC. You may encounter BASIC system error messages as well as accounting program errors. Other programs use a built-in Pascal disk format as a protection against copying. With this kind of copy-protected software, you will have to follow the directions included with the program for backing up your data and formatting new data disks.

As with any other program, the purchase of an accounting program will not automatically organize your finances. The program forces you to make decisions about what kinds of accounts you want to keep track of, but *you* must organize your information correctly and enter the right data.

Some accounting programs require you to run an installation program which puts your name and starting financial information into data files on a special data disk. (*Home Accountant* is one example.) This data disk must be used from then on. Beginning errors often occur when this installation has not been done correctly, or has been omitted. Then the computer cannot find the messages or files it needs on the disk. This happens either because the needed files have been stored on the wrong disk (for instance, on the disk in drive 1 instead of the one in drive 2) or because the program is uninstalled and the files aren't there yet.

One more thing: *Don't* accidentally use the capital letter O in place of the number 0. You may not notice it on the screen, and it may not be crucial when you are word processing, but an accounting program will not be able to calculate with a letter instead of a number.

There are both "home" and "professional" accounting programs for the Apple. The programs designed for personal money management include the *Home Accountant, Dollars and Sense, Your Personal Net Worth,* and *Personal Finance Manager.* Programs more suited for business include the *Practical Accountant,* the *BPI* series, *General Ledger,* the *PeachPak Accounting* series, and *Accounting Plus.* There are separate tax programs for tax planning and for preparing income tax returns. These include *Personal Tax Planner, Tax Manager, Tax Preparer,* and *The Tax Advantage.*

Although the relatively small amount of storage on Apple floppy disks shouldn't cause difficulty for the personal accounting programs, it could be a problem for large business accounting needs. Companies who wish to use their Apple IIe for extensive accounting will probably want to attach a hard disk to their system. This is best done when buying the system, to make sure that the accounting software will work with the hard disk. ProDOS is designed to run with floppy and hard disks, but DOS 3.3 needs special "translation" software to allow it to access the vastly increased storage space on a hard disk. If your accounting program can't make the transition, you're stuck.

The number of entries you can make with two disk drives is limited. You should find out how much data your particular accounting package will let you enter before you start out. If you find you are spending a lot of time switching disks, consider adding a third, or even fourth, disk drive to speed things up. It won't cut down on the number of disks you need to store your data and make backups, but it will decrease the time you spend making and processing entries.

PROBLEMS: Accounting and Bookkeeping

SYMPTOM: "BASIC error message ##" is displayed.

DIAGNOSIS: Many accounting programs are written in BASIC. The message refers to an error in the BASIC language rather than to a "basic"—as in "fundamental"—error.

REMEDY: You software manual will have a list of the program error messages (sometimes called "system errors," not to be confused with Applesoft errors) covering the particular program error messages built into the program you are using. These may not cover BASIC language programming or syntax errors, which have their own standard messages. Check your Apple BASIC manual for those messages.

SYMPTOM: Your printer prints out accounting statements on two lines instead of one.

DIAGNOSIS: Accounting programs are usually designed for a wide printer. You have a narrow carriage printer (80 columns across) while the program thinks it's printing on a 132-column printer.

REMEDY: If you have a narrow carriage printer, there are two things you can do. First, reinstall your program to tell it you have an 80-column printer. That is usually an option in the installation program. If 80 columns are too few for you, your best bet is to change the pitch size of your printer to 15 characters per inch (compressed print). You usually can do this with a dot matrix printer by sending a code to it in BASIC before you print. With a letter quality printer, you will have to change the width either with a setting on the front panel or within the DIP switches, or you may have to send a code through BASIC or the escape key (Esc) sequence—check your printer manual. Warning: for daisy-wheel printers, you will need to buy a 15 character-per-inch wheel, or your numbers may look too crowded.

SYMPTOM: Your payroll program calculates the wrong tax percentage.

DIAGNOSIS: You are using the wrong version of the program for the current tax year.

REMEDY: Obtain the correct update from the manufacturer or your dealer. The update may be a formula with a new percentage which you can program yourself for correct calculation, or it may be a new disk containing update information. To get the updated disk, you may have to send in your original software. If you have registered your ownership of software, the manufacturer should send you information on updates automatically with an offer to make an updated version available to you for a nominal fee.

SYMPTOM: "DISK FULL" message appears on the screen.

DIAGNOSIS: Either the disk really *is* full, or you have exceeded the number of entries your program can handle. If, for instance, your accounts receivable program can take up to 400 customers with a total of 50 transactions (e.g., sales or payments) each, and you have only 200 vendors, but with 150 transactions each, you have exceeded the computer's capacity to keep track of the entries. The *Practical Accountant* professional single-entry bookkeeping program allows up to 634 transactions with its minimum requirement of two disk drives.

REMEDY: If you are using a DOS-based program, first use FILEM to check *both* your program or system disk (usually in drive 1) and your main data disk (usually in drive 2). If you do have a decent amount of room left (at least 25 percent of your total data disk space), the problem may be the total number of entries. Check your program manual for the limit on the number of records you're allowed and review your entries. Also check the names of the files on your data disk to see if there are any files you can get rid of (the initialization "hello" program, for instance), and delete them.

SYMPTOM: The system crashes. No further keyboard input is accepted. No matter what you do, nothing responds and either you find yourself forced out of the program or you are forced to reboot.

DIAGNOSIS: There are several reasons for system crashes. It is possible you hit a wrong combination of keys which meant something to the computer—exiting the program or sending it on an errand from which it will never return. There could have been a "spike" or other disturbance in your power supply. Check your manual for other possible causes.

REMEDY: You will probably have to start your work over again. You may have lost all the work you have done in the session, or even some data previously saved on the disks. "Undoing" a system crash comes down to reconstructing the situation that existed before the crash. Some programs contain a program to perform a "fix" if you have left a program inadvertently. If it is a program in BASIC, and you are "kicked out" to the Applesoft BASIC prompt, try typing RUN (and hitting Return). That may put you back into the program and you can then proceed with a fix, or with reentering the data.

SYMPTOM: The computer doesn't stop processing; no new messages appear on the screen; the computer seems frozen.

DIAGNOSIS: The program is hung up because of a program or operator input error or because of external interference—

a power surge; a shutoff of the printer; a loose cable; an open drive door—or a key combination such as Control-S being pressed, halting further displays.

REMEDY: Don't be too impatient. If everything appears to be in order, give the program time to calculate. But after ten minutes or so, you probably should reset the computer and restart the program. First, though, try hitting the space bar a few times, just in case it's used as a *continue* signal for your program. Then reboot. Go over the sequence of all your actions. Check to see if the printer was off and should have been on. Be prepared to retrace some of your steps to fix any processes not ended properly as a result of the interruption. Check your data!

SYMPTOM: The program will not accept your entries.

DIAGNOSIS: You are not typing in upper case letters.

REMEDY: Many accounting programs, especially the ones written in BASIC, do not accept lower case letters as input. Keep your Cap Lock key on while running your accounting program.

SYMPTOM: Items already deleted from screen entry still print out.

DIAGNOSIS: You have not saved the most recent version of your file, and the old version of the file was automatically loaded to be printed.

REMEDY: Check the file being printed out to see if it's the correct version. If not, you'll have to find the corrected version or reenter the corrections. Turn off the printer to clear its memory (or buffer), then turn it on and try it again.

SYMPTOM: Your attempt to reconcile your bankbook with *Home Accountant* results in incorrect computations.

DIAGNOSIS: You have extra information—for instance, sample entries—mixed in with your entries. That's affecting the results.

REMEDY: Go back and check your data. Delete the extra information.

DIAGNOSIS #2: Some accounting programs have special ways of handling credit card entries.
REMEDY: Do not treat credit card entries the same as checkbook entries. See your manual for how credit card transactions are handled.

SYMPTOM: In the *Dollars and Sense* program, you can't exit the "define accounts" section of the program.

DIAGNOSIS: When you define accounts, you must enter at least one category as a "checkbook"; otherwise, you won't be able to exit this part of the program.
REMEDY: Define at least one account as a "check" account before continuing.

PROBLEM CHECKLIST

- Do you have extra formatted disks on hand?
- Have you made backups of your program disks?
- Have you made backups of data disks once they contain important data?
- Is the program installed correctly?
- Do you have a list of the program files which are supposed to be on each disk?
- Have you adjusted your printer or software for the desired width?
- Do you know the maximum number of records your program can handle on one data disk?
- Do you remember your password, if you are using one?

12

PRESCRIPTIONS FOR LONG-TERM HEALTH

CRYING WOLF

George bought a computer and a printer from a small retail computer store at a special weekend sale. He was looking for the best deal, and he was satisfied with the price of this purchase. The equipment and the programs were supplemented with an unusually good manual with helpful instructions for loading programs, copying disks, and performing computer maintenance. But George was impatient; any time something didn't quite work the way he expected it to, he called the store. At first, the friendly salespeople were patient and accommodating to this new computer owner; they knew that people like George need help. But as time went on, George found that his calls were returned less frequently.

Then something serious went wrong—his monitor conked out. George really needed help. He telephoned his computer dealer, but no one would talk to him. Everyone had listened to his false alarms too many times before. Finally he brought in his entire computer, disgusted with the poor service he was receiving from his dealer.

George never tried to learn how to solve his problems on his own. Unfortunately, cases like George's are fairly typical. In fact, that's the main reason most computer hardware and software manufacturers won't talk to "end users" about software problems. As I've shown, many seemingly overwhelming computer problems actually have fairly simple answers, which users could track down by learning their programs well, making an effort to understand their equipment, and trying to solve their problems in an organized way—before relying on their dealer.

DEALING WITH YOUR DEALER

When you do take your problem back to your dealer (if your dealer is one of those rare ones where a sympathetic person is willing to help you), he or she won't always know the answers.

There is a large turnover in staff at retail stores. Often you will encounter a friendly but uninformed neophyte who won't understand what you are talking about. Not all the sales staff members are computer experts. They know only enough to turn the computer on and load in one program—enough to show the Apple off. Apple authorized dealers have many classes and technical manuals for their staffs. Most of these classes concern hardware diagnostics and repairs.

That's why users' groups were formed—to share expertise and discoveries: to form a strong lobbying force to make sure manufacturers pay attention to problems in their machines; and to enable members to get group discounts on supplies.

COMPUTER SAFARI: BEFORE YOU MAKE YOUR BUYING DECISION

I have often encountered computer buyers who are nearly in a state of shock—exhausted from looking at too many personal computers. They are desperate to buy, but the sheer volume of quotes, claims, and comparisons has pushed them into a listless, almost catatonic state. They are more confused than when they started, and are anxious not to make the wrong decision. At that point, they're the ones who need first aid!

Computer shoppers deserve our sympathy. The process of buying a computer can be as demanding as going on a safari.

You have to be physically, mentally, and emotionally prepared for a grueling trek through the jungles of high tech.

It is important to think about what you need, and to do some reading, some talking to other Apple owners, some measuring, and some informed shopping.

If you are buying the computer for your children, find a consumer's book or magazine with objective comparisons of educational software so that the programs you buy are truly useful. Your school or local library may have such a guide. There are thousands of programs; some are very good, others are not. To consider what other uses you will have for your Apple, look at the mechanical, repetitive desktop activities in your life, such as writing letters, sorting lists, keeping inventories, balancing checkbooks, or even planning next year's vacation costs. Then there are the learning programs, such as typing instruction and foreign languages. It's important to make a list of the things you want to be able to do, find the software to do it, and see that software in action on the Apple IIe before buying. With so many programs available, it's easy to buy a bad piece of software (and it won't necessarily be bad because it didn't cost much!). When you're new at the game, you won't know until it's too late.

Make sure you are getting the right *combination* of the Apple, software programs, and printer for your specific needs. For instance, if you will be using the Apple for business, you will probably want the full 128K and 80-column card installed, but you may not want a color monitor, unless you use color graphics displays in your work. However, for home entertainment, games look much better in color, and if you want a certain program which runs color graphics, you must have the right kind of color monitor, composite (similar to but better than your home TV), or RGB (more expensive, but necessary for word processing or high-resolution graphics).

Different dealers emphasize different products and services. It's hard to compare on the basis of price alone. In choosing a dealer, consider those offering the Applecare service policies and prompt repair and troubleshooting services; having helpful staffs who will take time to talk to you; and having the equipment you want on hand.

Apple maintains good, regular liaison with its authorized dealers, and there is a basic group of Apple components which you should find everywhere. But you will still find that different stores have different varieties of software and different combinations of peripherals. The level of support and expertise is likely to be higher for the most popular items than for obscure or unusual ones. While you are still new at all this, think twice before ordering some exotic piece of software or peripheral—especially if you draw a blank look from your salesperson. You are unlikely to get any after-sale support for that merchandise.

Remember, too, that some stores may not have an inhouse repair capability, or may be far from where you live, so you may want to consider your alternatives. A number of large electronics companies offer repair services for computers other than their own, including the Apple. These include Sorbus/MAI, Xerox, General Electric, and TRW. Repair and service prices at these large repair centers are likely to be higher than at a local retail store. But Apple makes it very attractive for its dealers to recommend the Applecare maintenance contract, which, relative to computer repairs, is reasonably priced.

If you can't find any knowledgeable staff in a given store before you buy your Apple there, you are unlikely to find a knowledgeable person there after you buy, when you really need one. Find a store with a few helpful, informed people. With the high staff turnover in retail stores, it's possible that the person you talked to—and liked—will leave, and you don't want to find out that the rest of the staff lacks the technical knowledge to help solve your problems.

BEFORE YOUR EQUIPMENT LEAVES THE STORE

Apple equipment is designed for ease of use, but for your peace of mind have your equipment set up and tested in the store to see that it works and that all the parts, cables, interface cards, etc., are there. (NOTE: Discount stores don't offer this service—one of the advantages of full-price, full-service stores.) Watch how everything is put together. Your dealer wants to assure you that you are receiving factory-fresh equipment sealed in carefully packed boxes, and may prefer that you take it all home in the boxes. But if you don't want to have to come back immediately for help, it is worth your while to pay a little more to have the store test the system for you. The frequency with which components are "dead on arrival" (including little but essential things like malfunctioning cables) makes the in-store setup worth your time and money. If something later goes wrong when you set up your Apple at home or in your office, you will at least know that the machine did work when it was tested, and that chances are your problem is the result of something you are doing wrong.

Use your Apple as much as possible in the first couple of weeks. That way, any hardware faults, such as loose connections, defective disk drives, bad circuits, or bad chips, will show up within your warranty period.

Even if everything is going wonderfully, keep in touch with your dealer. Don't let your dealer forget you; drop in to buy a box of disks now and then. That way, the moral pressure on the dealer will be stronger if anything does go wrong and you need fast service to get you back on track. You will also get to know other store workers, who will feel more inclined to help you out even if your own salesperson is tied up.

OH, WE FORGOT TO TELL YOU . . .

There are so many little details involved with computers that it's easy to forget one or two. Computer dealers should know better, but occasionally you'll find that in the price they've quoted, they've forgotten to include the price of a cable you'll need to run your printer, or of a card you'll need to run that special software you just spent hundreds of dollars on. If you can get your dealer to assure you *in writing* that the estimate includes *everything* you need to make your Apple run correctly, you will save yourself some annoyance. If you do have difficulties in getting satisfaction, make sure you complain to the owner or manager fully and inform the person of your intention to take the matter further if necessary. The people at Apple care about how their dealers are doing with their customers.

AFTER YOU'VE MADE YOUR DECISION

You should be happy!! Once you have made the decision to buy an Apple IIe, you are at the start of a great adventure.

Working with your Apple will be completely different from the way you have done things in the past. You are likely to discover uses for your Apple that had never occurred to you before. And if you follow the advice in this book, your experience with your Apple will be a happier one.

NEW PARENT CLASSES

You may have a child who has had a chance to know his or her way around computers at school, but chances are you will need more initial help in getting started than the child can offer. Although designed for easy use, the Apple is still a powerful and complex machine, and some of the terms used to describe its operation are foreign to the average ear. Judging from the number of "how-to" books about the Apple II series on bookstore shelves, many people have found that the manuals alone are inadequate.

I believe your dealer should provide you with training in the absolute fundamentals of operating the equipment. But many dealers avoid providing this service or put customers off with high-priced classes because they aren't prepared to take on the responsibility for training computer users. It isn't worth their while—the typical computer dealer markup on computers is less than that on department store goods, and there is a limit to how much time and money your dealer can spend on you and still stay in business. But you need at least one good session covering what to do beyond turning the main unit on: how to load the programs you'll use most often; how to format and copy disks; and how to avoid the most common mistakes, such as reinitializing or over-writing essential disks.

At the beginning, you will want to learn everything. Unfortunately, there are so many things to learn, you are bound to be overwhelmed if you try to tackle it all at once. My students seem to pick up how the Apple works much faster if I relate the lesson to their particular interest or business. For instance, when I teach a lesson about electronic spreadsheets like *VisiCalc* and *SuperCalc*, I use examples like multiplying pounds of veal for a restauranteur, or board feet of lumber for a builder. So if the examples included in your program's manual are incomprehensible, try substituting an example of something familiar to you.

The learning process is not instantaneous. It will take you about a week to begin running the programs and a month or so to start feeling really comfortable with your computer. For business applications, acclimation should be done slowly and carefully over a period of three to four months. If you work at your computer learning project a bit every day with no pressure and even some game-time fun, you will wonder after two or three weeks how you ever survived without a computer.

If something goes wrong, reread the "How to Think About Computer Problems" section in the Introduction, then go over the specific troubleshooting checklists throughout this book. If the checklists don't help, contact your dealer or a repair service for further assistance. It will help if you give some thought to what you are going to say. Here is some advice.

HOW TO TALK TO YOUR TECHNICIAN

One of the most difficult and frustrating aspects of professional computer troubleshooting is the challenge of fully understanding what a customer is saying. When you are explaining a problem to a technical support person, you have to start from the beginning.

Imagine this typical exchange:

CUSTOMER: "The printer I bought from you yesterday isn't working."
TECHNICIAN: "Oh? What seems to be the trouble?"
CUSTOMER: "It won't print."
TECHNICIAN: "You mean nothing prints?"
CUSTOMER: "Nothing prints. I've tried everything."
TECHNICIAN: "Is it plugged in?"
CUSTOMER: "What do you mean? Do you think I'm that stupid?"
TECHNICIAN: "No, I mean is the cable from the computer to the printer plugged in?"
CUSTOMER: "Oh. I thought that was an antenna."
TECHNICIAN: "No, computers don't need antennas. Just plug that cable into the slot on the back of the printer."
CUSTOMER: "OK, I'll try that."

An exaggerated example, but meant to illustrate the different ways we see things. As mentioned in the introduction and elsewhere in this book, you must identify your problem as clearly as you can and make an attempt to solve it yourself before giving up and asking for help.

Like other repair people, computer technicians are so used to listening to bizarre descriptions of what is wrong that, instead of saving you money by giving you advice over the phone, they will often tell you to bring the computer in to the shop. There they'll fix what's wrong, and charge you the going rate for it. You will be relieved that the problem is fixed, and the store manager will be happy that the repair department is bringing in more money, so everyone will be happy—even though, with a little patience and determination on either side, you could have saved yourself a trip.

People always think and express themselves in different and often unexpected ways. I've found that starting from the beginning is the only way to make sure there's no misunderstanding about what the other person is seeing. So be prepared to describe what was happening prior to the problem, what subsequent action you took, and what happened after that. If you aren't sure about what you're doing (and that often will be the case in the beginning), get someone with a fresh eye to consider your problem. It's a good idea to ask a friend or colleague for advice before giving up or getting hopelessly bogged down in a problem yourself.

AN ANECDOTE: On one of the NASA moon missions, the space capsule kept rotating and couldn't be stopped. As the astronauts went through an extensive checklist of what could be causing the trouble, a strong epithet was heard from the capsule over an open mike and broadcast to millions of listeners. One of the crew had discovered the simple thing that had been causing the trouble. Apparently one of the hundreds of switches which was supposed to be on all the time had, in fact, been off. In desperation, the astronaut flicked the switch on and it worked—the capsule stopped its tumbling. Take heed!

PROBLEM CHECKLIST

- Don't buy your computer from someone who acts as though they're doing you a favor by talking to you.
- Anticipate that you are bound to spend a lot more money on your computer than just the cost of the computer itself. You're going to need line filters, disks, disk head cleaning kits, etc.
- You have a right to complain if hidden costs are brought out near the end of, or even after, the sale. Make sure you are being sold everything you need to have a fully working system for what you need to do, and that all the necessary equipment is figured into the price estimate you get from the store.
- See all equipment tested and demonstrated before you take possession.
- Did someone at the store show you how the parts fit together; how the interface cards go in; how to initialize a disk; and how to load in the main program?
- Have you obtained written assurances of the dealer's promises regarding back-ordered equipment, warranties, classes?
- Have you taken time to learn how to run the computer?
- Have you contacted your dealer promptly with any serious problems?
- Have you made an effort before contacting your dealer to work through the problem yourself, keeping notes as you go along?
- Do you know what your computer, along with your program, is capable of doing?
- Drop by your dealer occasionally, to pick up little items like supplies, and to make sure the dealer remembers your name.

FURTHER READING

BOOKS

The Personal Computer Book, by Peter A. McWilliams. Prelude Press, Los Angeles.

The Word Processing Book by Peter A. McWilliams. Prelude Press, Los Angeles.

Computer Wimp, by John Bear, Ph.D. Ten Speed Press, Berkeley, 1983.

Apple II User's Guide, by Poole/McNuff/Cook, Osborne/McGraw-Hill, Berkeley.

Don't! Or How to Care for Your Computer by Rodnay Zaks. Sybex, Berkeley, Paris, Dusseldorf.

A Whack on the Side of the Head by Roger van Oech, Ph.D. Warner Books, New York, 1984.

The Soul of a New Machine by Tracey Kidder, Avon Books, New York, 1982. (First printed by Little Brown, in association with The Atlantic Monthly Press, Boston, 1981.)

Mindstorms: Children, Computers and Powerful Ideas by Seymour Papert. Basic Books, Inc., New York, 1980.

Uncommon Sense: The Life and Thought of Ludwig von Bertalanffy, Father of General Systems Theory by Mark Davidson. J. P. Tarcher, Los Angeles, 1983. (Distributed by Houghton Mifflin Co., Boston.)

Gödel, Escher, Bach: An Eternal Golden Braid, by Douglas R. Hofstadter. 1979, Basic Books, New York; reprinted by Vintage Books, New York, 1980.

The Systems Approach by C. West Churchman. Delacorte Press, New York, 1979. (Reprinted as a Laurel Book by Dell Publishing, New York, 1983.)

Computer Power and Human Reason, from Judgment to Calculation by Joseph Weizenbaum. Penguin Books, Pelican Edition, London, 1984.

PERIODICALS:

Online Today, CompuServe Inc., Columbus.

Infoworld, CW Communications, Framingham, MA, and Menlo Park, CA.

Personal Computing, Hayden Publishing Inc., Rochelle Park, NJ.

Byte, McGraw-Hill Inc., Peterborough, NH.

INDEX

Accounting Plus, 120
Accounting programs, 119–25
  FIX module, 72–73
  "out of room" message, 73
  problem checklist, 125
  storage and, 120–21
  symptoms/remedies, 121–25
  types of, 120
Acoustic coupler, 58–59
Acoustic modems, 58
Apple DOS, xxix, xxx, xxxiii
  See also DOS.
Apple IIe, interface cards, 11–14
Applesoft BASIC, 30, 82–83
Apple Super Serial Card, 62
Appleworks, 101, 111
Applewriter II, 93–94, 96–97
ASCII (American Standard Code for Information Interchange), 58
Auto-dial modem, 63
Automatic recalculation mode, 102–3, 106
Auxiliary slot, 12

Backups, xviii
  formatting and, 30
  word processing and, 89–90
Bank Street Writer, 92–93, 95
BASIC, 81–82
  Applesoft BASIC, 30, 82–83
  Integer, 82
  symptoms/remedies, 84–86
Baud rate, 46, 61–62
Booting, 18
Breakout box, 47
Brother HR-1 printers, 53
Bulletin board service (BBS), 59, 61
Buying a computer, 126–34
  decision-making, 127–28
  problem checklist, 134
  training, 131–32

Cables, printer problems and, 45, 55
CalcStar, 101, 102, 104
CATALOG, xxxiii, 32, 36, 78
CATALOG D1, 67
CATALOG D2, 32, 36, 67
Cathode Ray Tube (CRT), 16
C. Itoh Printmaster, 44, 51
C. Itoh Starwriter, 44
Color screens, 15
Commands, xxx
CompuServe, 59, 60
Computers
  buying tips, 126–34
  common symptoms, xxxi
  conversing with, xxiv–xxvi
  problem-solving approach, xxvii–xxix, xxxi–xxxii
Control key, use of, 19
Control-Open Apple-Reset, 18, 20, 23, 25, 48, 81
CONVERT 13, 30, 78

/CONVERT, 78
Cooling fan, 14
COPYA, 29, 67, 79
Copying software, 65–67
CP/M adapter, 13
CP/M Format utility program, 30
Cursor movement, 89

Daisywriter II printer, 47
Data base management systems, 110–18
  "bugs" in, 112
  problems of, 26, 117–18
  symptoms/remedies, 113–17
  types of, 111
Data mode, 60
dBase II, 111
DBMaster, 111, 116–17
Diagnostics disk, 75
Diodes, 11, 12
DIP switches, 46, 51, 52–53, 54, 62
Direct-connect modems, 58, 60
Directory, 29
  damage to, 80
Disk Copy II, 75
Disk drive, 28–29, 31–33
  care of, 31
  disks for, 33
  misalignment of, 32–33, 74–75
  symptoms/remedies, 37–38
Disk drive controller card, 12
Disk heads, cleaning of, 31–32
Disk operating system, xxx
Disk space, for computers, 3–4
Disks, 33–37
  care of, 34, 39
  common problems, 36–37, 39
  directory, 29
  initializing, 29–31
  labeling of, 21
  notch in, 33
  prices of, 34
  single-sided/double-sided, 33
  symptoms/remedies, 37–38
  testing for damage, 35
Dollars and Sense, 120, 125
DOS, 20, 21, 85
  explanation of, 76–78, 80
  System Master Disk, 8
DOS BASIC, 30–31
DOS 3.3. xxx, 18, 22–23, 84, 86
DOS 3.3 CONVERT13, 30
DOS 3.3 INIT, 29
Double-sided disks, 33
Dow Jones Connector, 69
Dust, 3

Echo mode, 62–63
Edge connections, maintenance of, 13
Electronic spreadsheets, 100–109
  problem checklist, 109
  symptoms/remedies, 104–9
  types of, 101
  use of, 102–3
Eliza, xxv–xxvi
Epson MX100, 68
Epson RX or *MX-80*, 68
Error messages, 22, 24, 74
Escape (EsC) key, 81
  use of, 19
Escape sequences, 69, 74

FILEM, 37, 67, 73, 79, 85
Floppy disks, 28
Footprint, 3
Formatting, xxix, xxx, 29–31
Formatting a volume, xxix

Game control port, 13
General Ledger, 120

Hard disk, for accounting programs, 121
Hardware, problem checklist, xxxii–xxxiii
Hayes Smartmodem, 58
Heat, dangers of, 5–6
Hierarchical data base program, 111
Home Accountant, 120, 124–25

Imagewriter, 68
Incredible Jack, 101, 111
InfoStar, 111
INIT, 29

Initializing, xxix, 29–31
Installing software, 67–69
Integer BASIC, 82
Integrated software programs, 101
Interface cards
  cooling fan for, 14
  problems with, 13–14

Jane, 101, 111
Jumper block, 46, 62

Keyboard, 16–17
  problems/remedies, 25–26
  typing problems, 17
Keyboard buffer, 25

Line filter, xix, 5
Logging off, 60
Loop, computer hung up in, 23–24, 25

Magic Window, 95, 97
Mail-merge programs, 90–91, 97–98
Main circuit board, 12
Main unit, problems/remedies, 19–24
Master Type, 17
Memory chips, 11, 12
Modem card, 13
Modems, 57–64
  acoustic type, 58
  direct-connect type, 58, 60
  power sources for, 5
  problem checklist, 63–64
  symptoms/remedies, 61–63
  terminal mode, 60
  use of, 59–61
  workings of, 57–58
Monochrome screens, 15
Moving equipment, 8–9
MUFFIN, 78
Multiplan, 101, 102, 105–6, 107, 109

Noise filter, 19
Novation J-Cat, 58

Okidata Microline 92, 68
Operating manuals, xxx
Operating systems, 76–81
  DOS, 76–78, 80
  erasing systems disk, 79–80
  problem checklist, 86–87
  ProDOS, 78, 79, 80–81
  symptoms/remedies, 84–86

Parallel printer card, 13
Parallel printers, 42, 68–69
Parity, 46
Pascal, 30
Path/name format, 83
PeachPak Accounting series, 120
PerfectCalc, 101, 103, 108
Peripherals, 12
Personal Finance Manager, 120
PFS series, 90–91, 111, 113–15
Piewriter, 93
Pitch size, 50
Power outlets, 5
Power strip, 5, 19
Power supply, checklist, problems, 27
Practical Accountant, 120, 122–23
Printers, 40–56
  compatability with Apple IIe, 41
  installing software and, 68–69
  parallel versus serial, 42, 68–69
  problem checklist, 55–56
  self-test, 43, 44
  stopping during printing, 43–44
  symptoms/remedies, 44–56
Problem-solving approach, xxvii–xxix, xxxi–xxxii
ProDOS, xxx, 18, 22–23, 31, 82–83, 84
  explanation of, 78, 79, 80–81
  "Format a Volume," xxix, 30
ProDOS "/CONVERT," 31
ProFile 5 megabyte hard disk drive, 83
ProFile 5 megabyte hard disk drive controller, 13
PROMS (Programmable Read Only Memory), 12
Proofreading programs, 91–92
Protocols, modem, 58

Quick File II & IIe, 111

Radiation, from VDTs/CRTs, 16
Random Access Memory (RAM), 3, 18, 21
Read Only Memory (ROM), 76, 82
Rebooting, 18, 20, 23, 25
Relational data base program, 111
RENAME, 89
Resistors, 11, 12
RF modulator, 15
RGB color monitor, 15

Screen, 15–16
  blank screen, 10–11
  common problems/causes checklist, 26–27
  loosing material, xvii–xviii
  monochrome/color, 15
  physical dangers and, 16
  symptoms/remedies, 19–24
  television display, 15
Scrolling, 89
Sectors, 29
Self-test, printers, 43, 44
Serial cable, modems, 57
Serial interface card, 13, 46
  modems, 5, 57–58
Serial printers, 42, 68–69
Setting-up, 1–9
  avoiding problems, 7–8
  common mistakes, 7
  computer furniture, 6
  desk/table surface area, 3–4
  dust and, 3
  heat sources and, 5–6
  power outlets, 5
  static electricity and, 2–3
Signalman Mark VII, 58
Signalman Mark XII, 58
Single-sided disks, 33
6502B chip, 11
Slots, for circuit boards, 12–13
Software, 65–75
  copying disks, 65–67
  installations of, 7–8, 67–69
  printers and, 68069
  problem checklists, xxxiii–xxxiv, 75
  symptoms/remedies, 70–75
Sorting, 114–15
Source, The, 59, 60
STAT, 73
Static electricity, 2–3, 21–22
Sulfur dioxide, dangers of, 6
SuperCalc, 101, 103
Super Serial interface, 57
Supertext, 92
Surge filter, 19
Surge protector, xix, 5
Syntax errors, xxiv, 22
SYSOP (system operator), 59
System Master Disk, 8

Tax programs, 120
Television display, 15
Terminal model, 60
Tracks, 29
Transferring files, modem and, 61
Typing Tutor, 17

UCSD p-system, 30, 69

VERIFY, xxxiii, xxxiv, 79, 85, 86
VersaForm, 111
Video Display Terminal (VDT), 16
VisiCalc, 101, 102, 103, 104, 106, 109
VisiFile, 111

Wires, printer problems and, 55
Word Handler, 94–95, 96
Word processing software, 88–99
  backup copy and, 89–90
  mail-merge programs, 90–91, 97–98
  problem checklist, 99
  proofreading programs, 91–92
  symptoms/remedies, 95–99
  types of, 92–95
Wordstar, 91, 93
Write-protect tab, xxxiii, 66, 67, 71–72, 79

Your Personal Net Worth, 120

**"HELP!
THERE'S SOMETHING WRONG WITH MY COMPUTER!
The screen is blank.
The cursor won't move.
The disk doesn't work.
The printer isn't printing.
WHAT DO I DO NOW!?"**

Dorthea Atwater, a software specialist at a major Los Angeles computer store, offers a clear diagnosis and prescription for every common problem computer users face. Here at last is a first-aid handbook, in plain, nontechnical English, that enables you to deal with your Apple's "aches and pains." It shows you how to identify a problem—"What exactly is wrong with this machine?"—and gives you clear, step-by-step instructions for how to fix it.

FIRST AID FOR YOUR APPLE® II/IIe

The fun and easy way to help your computer do its best to help you!

31942
0
70999 00695
ISBN 0-345-31942-7

Computers/
Introductory

FIRST AID FOR YOUR APPLE® II/IIe

Dorthea Atwater

345-31942-7-695